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JAN. 1972

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DIRT BIKE ROAD TESTS

- 350 Kawasaki Bighorn
- 250 BSA Victor
- 125 DKW Enduro
- 100 Kawasaki Bushmaster
- 75 Kawasaki Dyna-Mite

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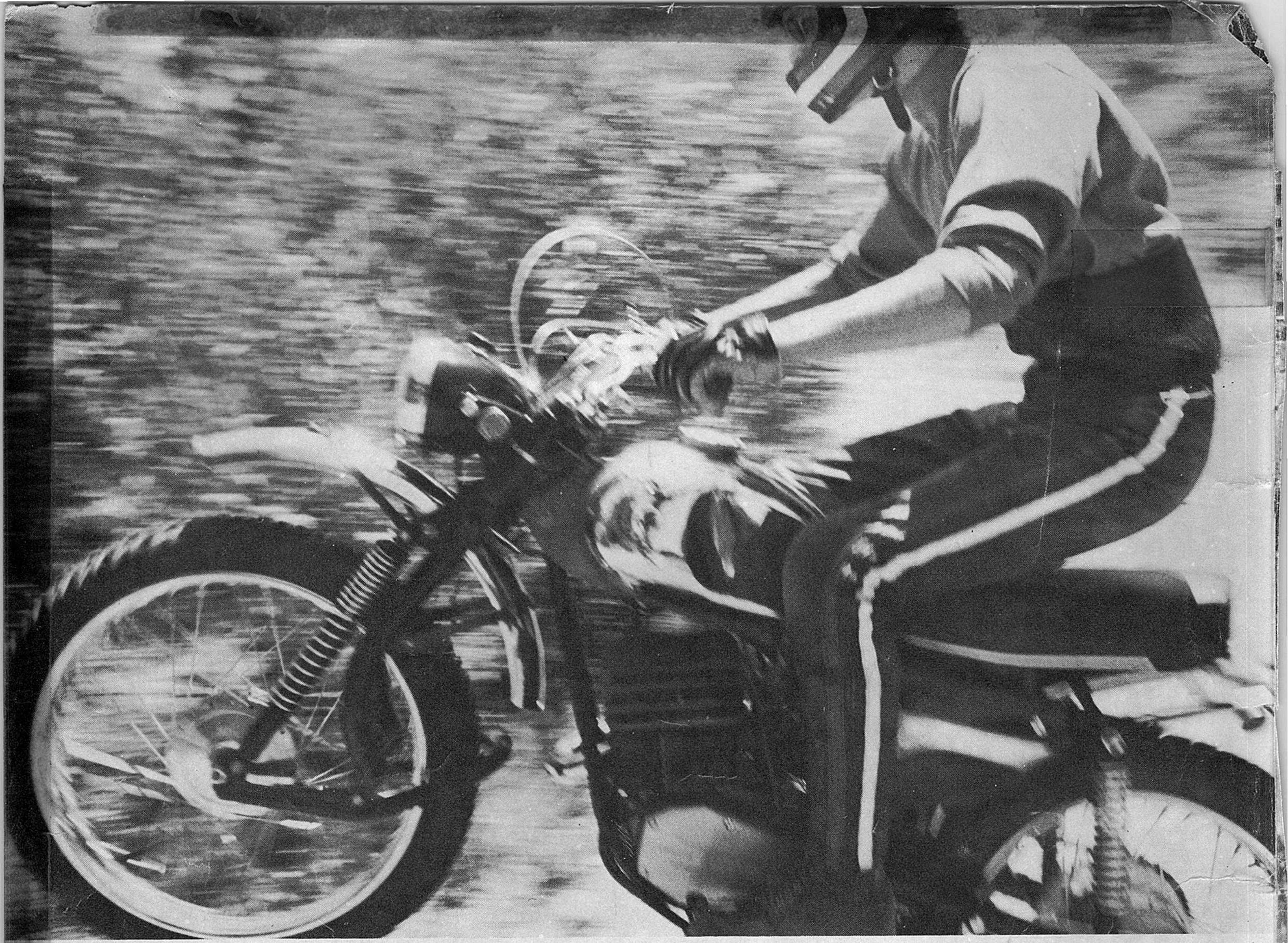
UNREAL! Volks-Powered BMW



BELL
KAWASAKI

PERFORMANCE CYCLES

VOL. 2, No. 1 JANUARY, 1972

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MARTYN L. SCHORR
Executive Art Director
HOWARD WINTERS

Editor
JOE OLDHAM
Associate Editor
LAUREN FRANSEN
Contributing Editors
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Contributors
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Art Assistants
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CAMILLE SCALERE
Creative Consultant
MARVIN NUDELMAN
Production Manager
R.J. NEUMANN

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COVER—Kawasaki's 350 Bighorn F5. Photo by David Gooley.

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JOE OLDHAM

THANK GOD FOR THE Four Owners Club and Bill Robinson. The Four Owners Club is about the only group now in existence that has been able to bring pressure to bear on any of the motorcycle manufacturers.

The pressure has been in a constructive way. The pressure has been not only for members, 99% of whom own Honda 750 Fours, but for all motorcycle owners.

The Four Owners Club has forced American Honda to recognize its responsibility to the people who buy their motorcycles. Hopefully, it's the beginning of a new era of corporate responsibility to the motorcycle consumer.

You probably all know about the Four Owners Club. Bill Robinson is the head of the organization and works for it full time. He and a group of other Honda enthusiasts started the club right after the CB-750 was introduced.

Originally, the club was solely an organization for deseminating information to 750 owners, information such as tuning tips, factory service bulletins and performance information.

Soon it became apparent that while the CB-750 was one hell of a motorcycle—perhaps the most sophisticated in the world—it did have some inherent design defects that needed correcting.

American Honda knew about the defects and were honoring the warranty whenever someone had trouble with the Four. But two of the design defects—a sticking throttle and a tendency to sling off chains—were more than a nuisance. They were downright dangerous.

The Four Owners Club decided to tackle the task of getting American Honda to recall all pre-K1 CB-750s to fix the two defects *before* anyone was killed or maimed.

American Honda refused. They said they would continue to honor the bike's warranty if the machine malfunctioned because of the defects. But they had no intension of recalling all the bikes in the country.

A motorcycle recall is unheard of to begin with. The club's request was unprecedented and American Honda felt no obligation to recall many thousands of motorcycles to fix the defects.

Robinson and the club appealed to the Department of Transportation to order the recall. The DOT was too busy to get involved with the situation, so that was another dead end.

Finally, Robinson contacted the *Los Angeles Times* and they ran the story. The story was picked up by a couple of the wire services and within 13 days, American Honda announced that they were recalling all early CB-750s for throttle modifications.

The chain situation was still unresolved. Until now. After many more letters and direct consultation with American Honda, the company recently announced that they were again recalling early 750s, this time for the chain fix.

Naturally, CB-750 K1 models incorporated all the design changes to alleviate the earlier problems.

The important thing is that the door is now open for motorcycle recalls when a design flaw is inherently dangerous to the operation of the vehicle. The precedent has been set, largely through the effort of Bill Robinson and the Four Owners Club.

Now that the precedent has been set, we see no reason why other manufacturers should not be pressured by the Department of Transportation into announcing recalls of models with design flaws. The automobile industry has had this for a couple of years now and everyone is better off.

No one wants to ride around in or on a time bomb that's looking for a place to explode. Maybe we won't have to from now on.

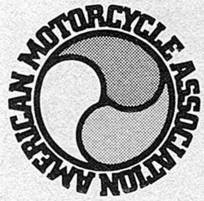
AMA MEMBERS:

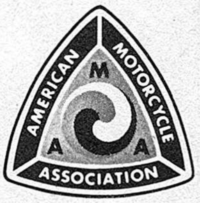
vote for the emblem of your choice-

As reported in the May issue of AMA News, members of the American Motorcycle Association have been invited to vote on the emblem of their choice. If you are an AMA member, please send in the ballot below indicating your choice. Please note that the colors are important to the final concept.

If you are not an AMA member and would like more information, please write to Box 231, Worthington, Ohio 43085.

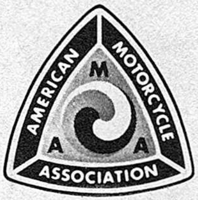
A. Award winning design with central triskele in red, white and blue.





B. Traditional design with central triskele in red, white and blue.

C. Traditional design with central triskele in red, green and yellow.



Mail this Ballot to:
THE AMERICAN MOTORCYCLE ASSOCIATION
P.O. Box 231, Worthington, Ohio 43085

I am an AMA member and would like to vote for Emblem:

A: ☐ B: ☐ C: ☐

Name____________________
Address____________________
City________State________Zip________
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CLIFF GROVER

THE STATE. YOUR PROTECTOR and keeper. The State. Always devising new and improved methods to make your life safer. On the constant alert for your well being. The State. Its main interest is keeping you alive because when you're dead you can't pay taxes.

Since the State assumes that any person who rides a motorcycle is an ignorant fool hell bent on self destruction, they've come up with all kinds of gimmicks to keep him alive—in spite of himself. Gimmicks like helmet laws, goggle laws, headlight laws, things motorcyclists wouldn't dream of doing on their own because it takes the suicide out of the sport, and after all, isn't that what it's all about?

The State must think so if the volume of restrictive bike laws coming down the pike can be any judge. When these laws are passed, there's very little chance of getting them repealed. Government has an affinity for controlling things and there's as much chance of government relinquishing control of something as there is of them repealing taxes. It's all for our good, they tell us. We're supposed to benefit under this system.

Unfortunately, the system works out much better on paper than it does in reality. Take the headlight law for instance. In spite of the drawback of a constantly burning headlight putting a strain on an electrical system that was not designed to take it, the basic idea—making a rider more visible to other motorists—is a good one. But what's been happening in a lot of cases is that a motorist noticing a rider's light on during the day all but runs him off the road trying to tell him he's got his light on. This has happened often enough to prompt at least one New York legislator to try to have this law repealed this fall. Good luck!

Another area where the State has made great strides in safety is the motorcycle road test. This is a way of screening out the incompetent riders from using public thoroughfares. The concept of this test has come a long way.

Way back, shortly after the earth had cooled and motorcycle road tests were first coming into vogue, I was required to have my riding ability analyzed by an official of the State to make sure I wasn't a hazard on the road. The test was typical of government's fledgling attempts at control in a new area, sort of feeling around before really getting their teeth into it.

The test was given in a large open area and was straightforward enough. "Ride up to the flagpole" (about 50 yards) "and come back without falling off." At the time, this was enough to demonstrate one's mastery over the machine. Well, times have changed and the State has perfected their new, improved road test.

Before I get into the road test itself, I'd like to fill in a little background from an economic standpoint. With taxes and prices going up, people are looking to get more for their money. The thing that government agencies are scared of most are letters from taxpayers about how government employees are goofing off or not giving good service or generally wasting taxpayer's money. So the government has to give you more for your money so you won't write any letters. Ninety percent "service" rendered by any agency is hassle. Red tape and bureaucratic hassle. So in order to make you think you're getting more for your taxpayer's dollar, the government is developing new and better hassling techniques. Motorcyclists in particular are getting a real bargain in government service. Ever consider the cost to the taxpayer in man hours spent on unnecessary hassling of riders by police, public officials and the legislators who cook up all the Mickey Mouse bike laws?

But back to the road test. I recently went with a good friend, Joe, for his bike road test. Joe's been riding for a couple of years and he's pretty good at it. But he never bothered taking the test. He just kept renewing his learner's permit. We went to a beautiful road test inspection station in Jersey with a brand new Honda Four borrowed from a dealer.

After showing the inspectors the necessary papers, Joe was informed that he couldn't take the road test on this bike because it hadn't been inspected.

"No problem," said Joe, "I'll just get on the inspection line and come back after it passes inspection. After all, it's a brand new bike that's been carefully set up by the dealer, so everything is OK."

"No way," said the inspector "That bike has dealer's plates. It can't be inspected until it's sold. Sorry, but if Governor Cahill himself came riding in on that bike, we couldn't inspect it. It's the law."

Since we're not the kind of folks who hassle with the law, we returned a couple of days later with another bike, also a Honda Four (already inspected) that was borrowed from a neighbor. With all the papers in order, a Trooper outlined the maneuvers Joe was to perform on the specially designed test course. The course consisted of some S-turns, a stop sign, some parking bays and a set of four pylons.

Joe finally got the program straight after four explanations. I guess he was a little nervous. The trooper was supposed to observe him through a large window in the office next to the course. I waited inside while Joe went out, fired up the Honda and proceeded around the course in slow motion. I didn't know what would happen first, the plugs on the Four fouling out or the trooper going home for dinner.

Just after Joe pushed off on his 1½ mph exhibition of dynamic riding skill, another trooper stepped into the office with a little rubber doll he had just found or confiscated from someone. Both troopers proceeded amid much giggling and guffawing to draw sex organs and related parts on the little rubber doll, totally ignoring Joe outside who was really going all out

(continued on page 74)

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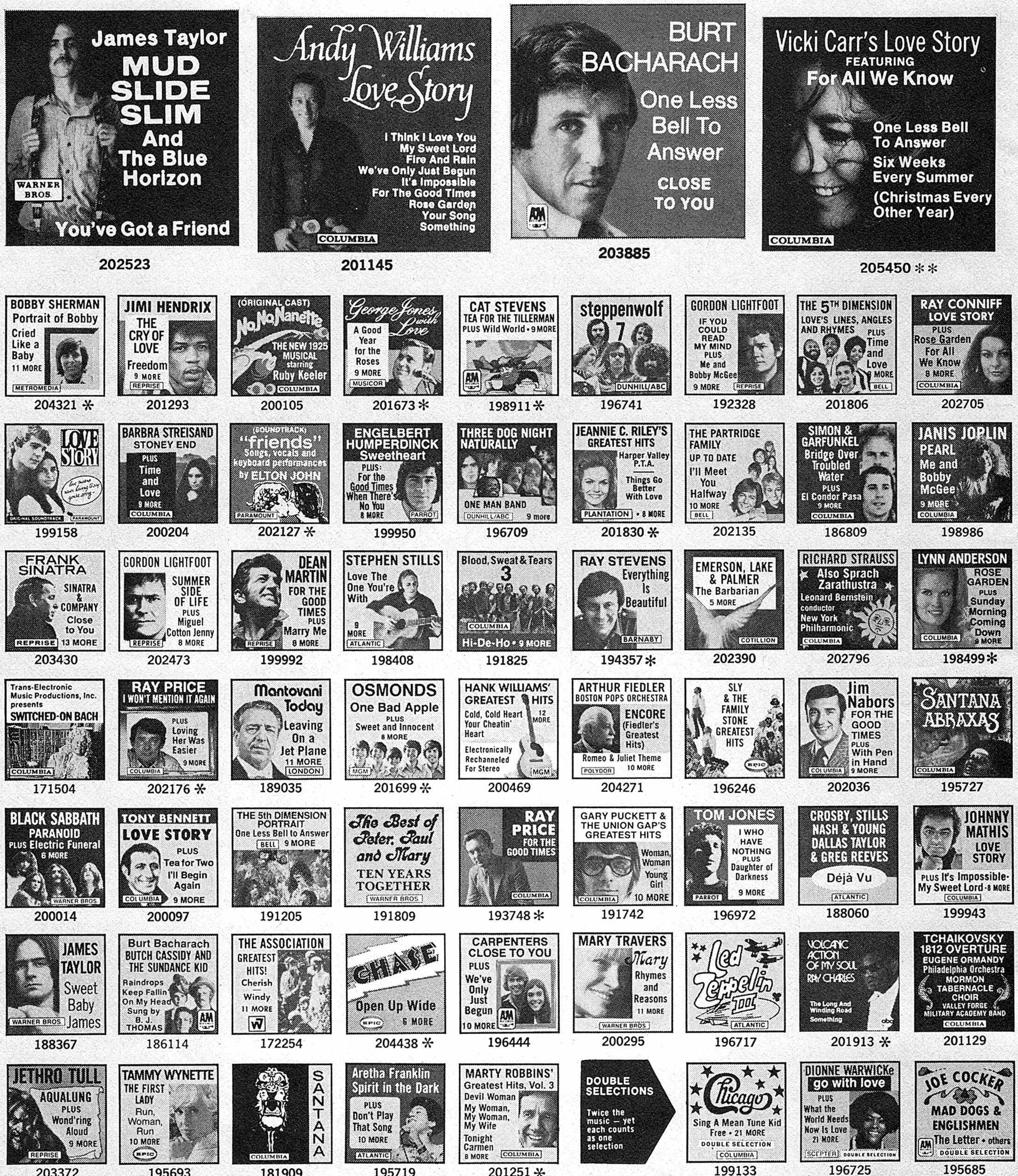
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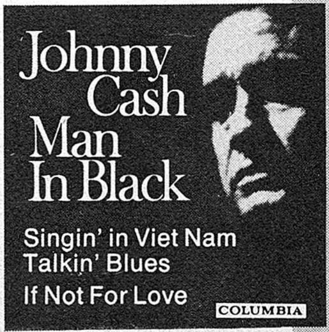

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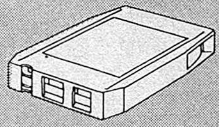

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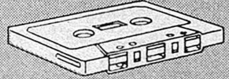
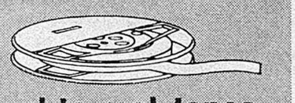


tape cassettes

OR



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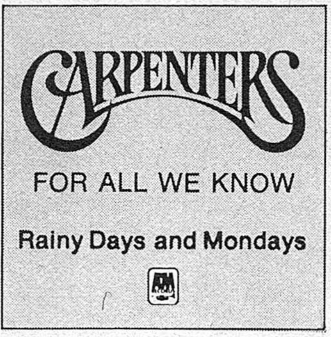

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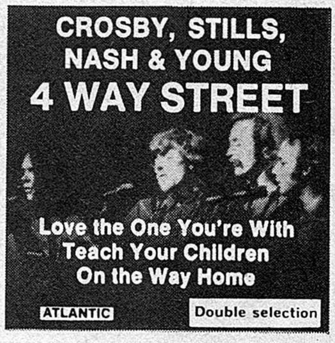

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SEND ME THESE 5 SELECTIONS
for which I've enclosed my dollar as payment

☐ **Mr.**
☐ **Mrs.**
☐ **Miss** ....
(Please Print) First Name Initial Last Name

Address ....

City .... **State** .... **Zip** ....

Do you have a telephone? (check one) ☐ **YES . . .** ☐ **NO**

APO/FPO addressees; write for special offer

TOM BAILEY

AFTER CAREFULLY PLANNING the route he would take to the race, Al MacNulty folded the maps and slid them into a large manila envelope. Then after pouring himself a glass of orange juice, he swung open the back door and strolled into the backyard toward the garage.

It was the second Saturday in November. The day before the last road race of the season. The air was clear and chilly. It'll be good racing weather, MacNulty thought to himself as he approached the garage.

He took one last drink of orange juice, then opened the garage door. Almost immediately he was hit by the sweet smell of castor oil. Breathing deeply, he stood in the doorway staring at his racing bike. And remembering the first time he'd smelled that wonderful scent.

The BSA Rocket Three road racer was sitting in a dark corner, poised and ready to do battle. MacNulty was already tense. He wanted to win decisively. But he knew he'd probably do what he always did—hang back during the early stages, drive consistently and wait for the initial leaders to suffer mechanical failures, then move up and finish second or third.

It was time to begin loading, so MacNulty walked into the garage. He switched on the lights and radio. The soft music of John Denver filled the room. And MacNulty drifted mentally to the Bridgehampton course on which he would be racing the next day. Thinking. Thinking of the long straight as he packed spark plugs and tools, And sweeping corners where sand blew onto the track on windy days.

He'd almost finished packing when he heard the sound of the air-raid warning signal on the radio. Thinking it was a test, he switched the station. But the signal was on all the stations. "I wish they'd hold their tests in the middle of the night, or at least hold 'em on one station at a time," he said to himself as he reached out to shut off the radio.

Before he could turn it off though, a high pitched voice broke in above the signal. "This is not a test. Nuclear missiles have been detected heading for the greater New York area. They will arrive in less than one hour. For further instructions you should tune to . . .," it said.

MacNulty went into shock. He sat down and tried to convince himself that it was a mistake. But as the voice repeated the message every 30 seconds or so, he accepted it as reality. And he began to consider what he would do with the last hour he would live. One thing for sure, he wouldn't die hiding in a fallout shelter.

He'd been sitting about five minutes when he suddenly jumped up. He ran across the garage and pulled his racing leathers out of the box he'd packed them in. For an instant he searched for his helmet. But then he realized that if he made the corner he wouldn't need it. And if he didn't make the corner he wouldn't need it then either.

The corner was the second part of a high speed S turn on a country road near his house. When he had been in high school, everyone had raced on the road. He had a Ducati then. A light, easy handling bike. Not too powerful, but nice. Almost the exact opposite of his BSA Three.

The bright red fairing of the bike reflected light into his eyes as he rolled it into the street. The sky was deep blue and peaceful. The idea of imminent destruction on such a day was absurd. So MacNulty didn't try to consider it. He just accepted it.

After turning on the fuel taps and tickling the carbs, he slipped the bike into first gear. He pulled in the clutch and drew the bike backwards about three feet. Then he pushed the machine forward. Three steps later he jumped on the bike and let out the clutch.

The engine caught instantly. And MacNulty was headed for the corner. As he rode through town he was thinking of the last time he'd tried to take the corner on the limit. And the time he'd spent in the hospital recovering from his injuries.

In what seemed like no time at all, MacNulty was at the corner. He shut off the engine, leaned the bike against a tree and surveyed the road. Looking back at the first half of the S, he reckoned he'd be able to take it flat out. The second half was different though. It tightened just a little and a rock wall bordered the corner. It could be taken flat out, but he'd have to be on exactly the right line. In his mind he flashed on his previous experience on that turn.

That time he'd been on his Duke. He'd come into the corner flat out. And he'd tried to back off because he was on the wrong line. He'd only been off about a foot, but it was too much. As he'd begun to exit the corner, the centrifugal force had pulled him out farther and farther until the bike kissed the rock wall.

That had been a bad one. But this time it didn't make any difference. The idea was comforting but at the same time annoying. He realized that since the time before he'd been afraid to drive as hard as he could. Even at the races he'd been holding back. And he wished that the desire to push himself to the limit had come sooner.

He stood for a few minutes thinking of the races he might have won had he been going as hard as he could've. Then looking at the sky he walked over to his bike. He gave it a push start and rode through the corner slowly. He would've liked to have practiced the turn a few times but he was afraid that the bombs might fall before he took the corner at the limit. And taking the corner at the limit was the only thing in the world that mattered to him.

When he was on the straight past the S, he turned the bike around and rode back to the beginning of the road. He then turned around again. And began accelerating toward the turn. There was a long straight before the S and the BSA gathered speed quickly. The glowing orange leaves on the trees lining the road became a blur. And MacNulty wondered for an instant if he'd made the right choice.

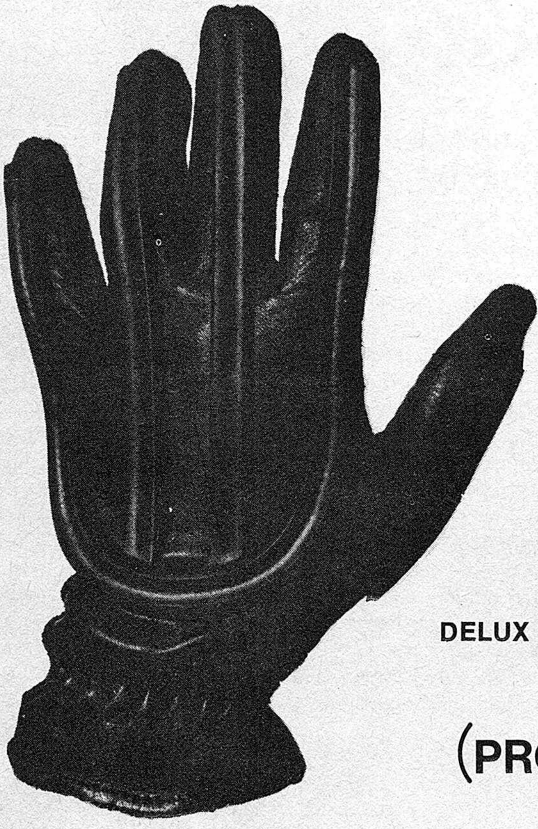
Before he could decide though he was in the middle of the first part of the S. He banked the bike over and aimed it toward the second part of the corner.

The machine swooped out of the turn a lot faster than he'd imagined it would. He was off the line too. But only about six inches. For an instant he had to fight the urge to shut the gas off. He was filled with terror and ecstasy. But he kept the gas on, banking the bike over the other way as far as it would go. Then shooting into the second half.

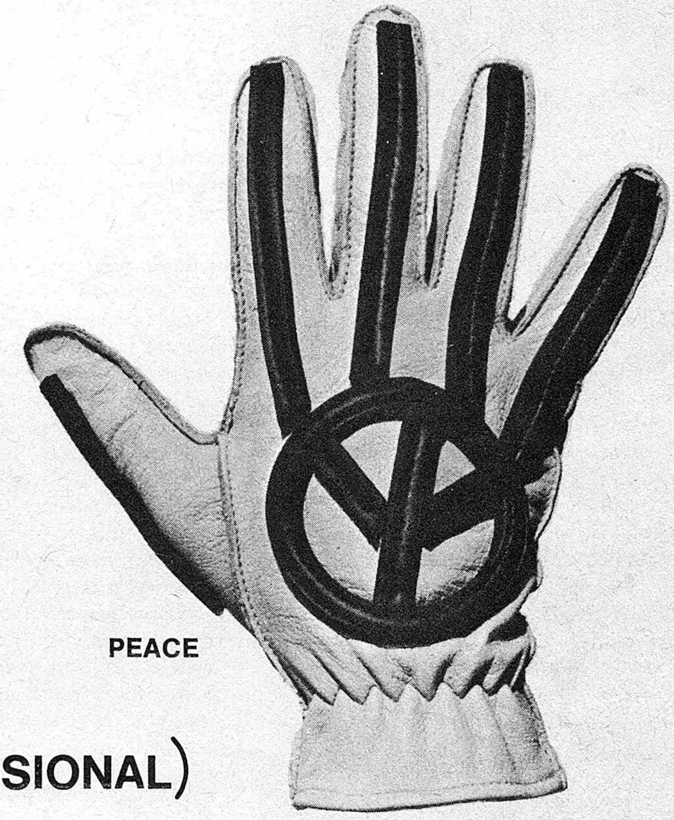
The bike was riding smoothly until he reached the part of the corner that tightened up. At that point it began to drift. Not violently, but it was being pulled out towards the rock wall. This was natural though. And in any case there was nothing

(continued on page 68)

HANDS UP!



DELUX



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ROAD TEST

350 KAWASKI BIGHORN

Lots of power and showbike paint and finish. But still a lot of rough edges showing

PHOTOS BY DAVID GOOLEY

KAWASAKI INTRODUCED their first Bighorn to the riding public in 1970, touting the marvels of the Hatta fully adjustable front suspension, using the forks as one of their main selling points for the completely new bike.

The Bighorn had to be designed from the ground up since a) Kawasaki had no machine like it in their lineup at that time and, b) they wanted to build a truly good 350cc dual-purpose bike that would sell.

The bike had problems the minute the first one rolled off the assembly line.

The subject of our test, the current F-5, remains much the same as the original—with the exception of 114 major and minor improvements.

Right off, one of the nice things the bike has going for it is it's styling which sort of beckons you to throw a leg over the seat and give it a try. We did.

The 350 Bighorn is a fairly big hunk of iron, or at least feels like it is. Test weight—300 lbs—falls close to that of it's equal displacement competitors. Yet it feels as though it weighs much more.

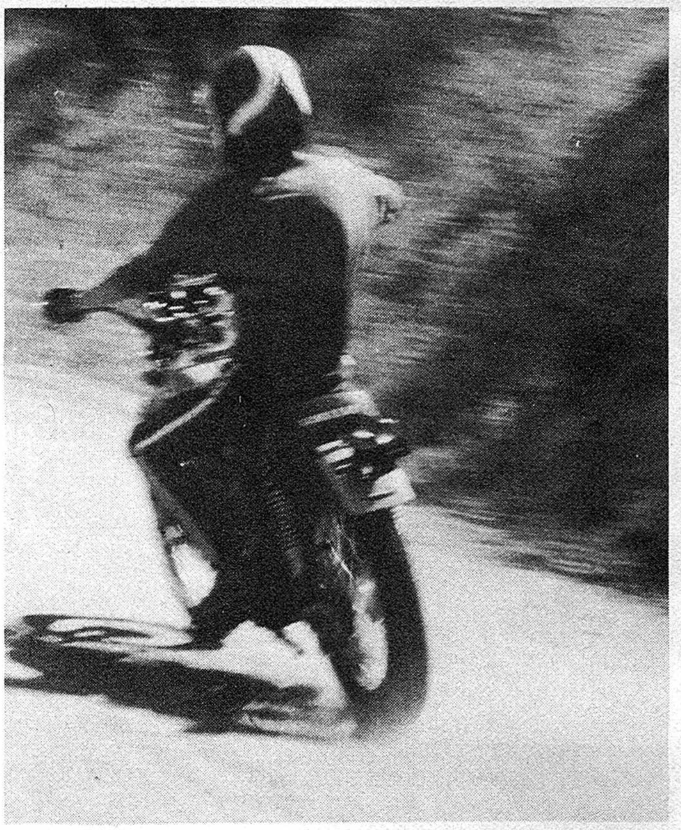
We never could figure out what it was about the machine that gave the impression of being so much heavier than other bikes of almost equal weight. Bulkiness certainly was not the culprit. It was no wider than the other motorcycle used for comparison.

As a matter of fact, one of the surprising features on the Bighorn is the narrow width of the rotary valve engine. Usually, since the carburetor must protrude from the side of this type unit, the engines are wide and and bulky and unsuitable in an off-road frame. Fortunately, Kawasaki designed an extremely thin hardened steel rotary valve and kept the engine width narrowed down.

The engine itself is very powerful and the power band is so wide you really have to try it to believe it. Since the motorcycle is designed to be a dual-purpose, all around machine, this wide power spread is very necessary due to the wide variety of demands it will be subjected to.

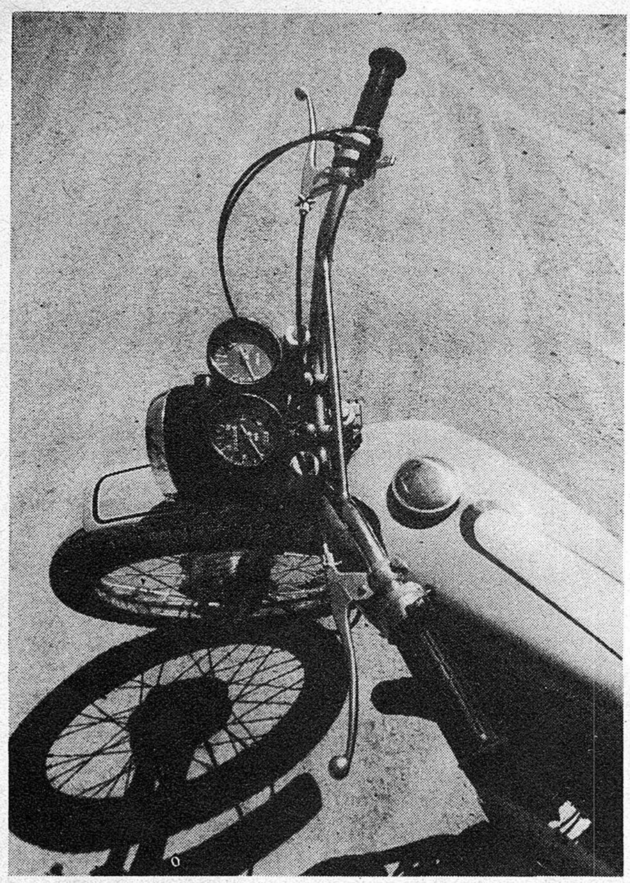
The engine unit is an all-alloy 2-stroke single that pumps out 33 horses from its

Handling was above par for a dual purpose machine.



Despite the photo, no vibration was felt on the road.
Our fearless photographer did more vibrating than the Bighorn.

On the highway the bike was a dream to ride. It had more than enough power to spare.



Instruments are rubber mounted. There is no steering damper.

Testers found riding position awkward, bars too far forward.

346cc of displacement. Maximum power is developed at 6500 rpm while maximum torque comes in at 5500 on the scale.

A 32mm Mikuni carburetor is on the right side of the engine in it's own little dust and waterproof cavity. It draws filtered air through an oiled foam element that is mounted up high and just under the hinged flip-up seat. The air then travels down through a rubber tube and into the crankcase cavity. You can take the 350 into very deep water and not worry about stalling out. Enduro riders will like this feature.

The ignition system is Kawasaki's CDI—capacitive discharge ignition—which was first used on the Mach III. It's an advanced version, though, and uses the surface gap spark plugs common to the CDI. Plug fouling is virtually eliminated and plug life is greatly extended.

You'll find two other great features in the fuel system. One allows you to change main jets from the outside of the engine without removing any covers or taking off the carburetor. You just remove a small threaded plug on the cavity cover to the carb. This is a time saver in any form of competition. The other nice feature is the fact that you can now leave your gas petcock turned on without fear of fuel leaking into the engine. Fuel flow is vacuum controlled and only allows fuel to flow when the engine is running. Bravo!

The transmission is a 5-speed that shifts down for low and up for the rest, with neutral between first and second as is common practice. We're sorry that Kawasaki didn't use the same pattern as found on the Mach III with neutral all the way down. Neutral is always so easy to find with that shift pattern. A neat feature on this gearbox is that you are able to switch from a left to right shift if you so desire with an inexpensive kit. Many riders who are used to a righthand shift won't have to adapt to a left.

The muffling system on the 350 was a sore spot to everyone's ears. It seemed nearly as loud as an unmuffled expansion chamber. If you ride on the street and don't get a ticket you'll be lucky. You'll still get dirty looks from the average person as you pop-pop on by. The pipe is upswept and is on the left side of the motorcycle. It is tucked well in and a heat shield protects your leg from burns.

The suspension system is where most of the attention becomes focused when discussing this machine. The rear suspension is of the normal variety in the form of 5-way adjustable shocks attached to a tubular swinging arm.

The front suspension uses the much talked about Hatta telescopic forks that are completely adjustable. In appearance, they resemble the Ceriani-type units and have a provision for a fork brace if the owner deems one necessary. We highly recommend using one since there is quite a lot of side flex when the forks are used in the forward extended position. We'll explain further on.

At the lower end of the forks, there is an additional lug casting which gives the Hatta forks much of their adjustability. When the forks are attached to the normal or center lug, they are in their normal position, the position used on most other dual-purpose dirt bikes. The center position is designed for all around riding and is best for street use.

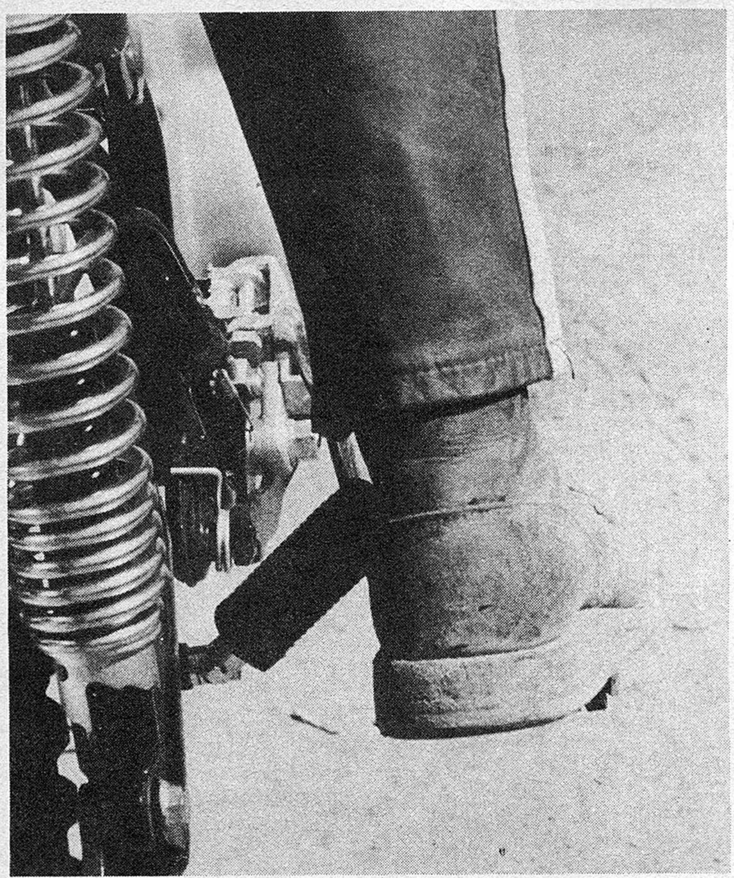
The additional lug gives you a rear position which increases trail to provide greater stability for straight line running at speed. It is best for desert racing or cross country high speed running.

The forward position reduces trail to provide greater slow speed maneuverability and results in lighter steering and quicker handling—both desirable assets for trials and low speed trail riding.

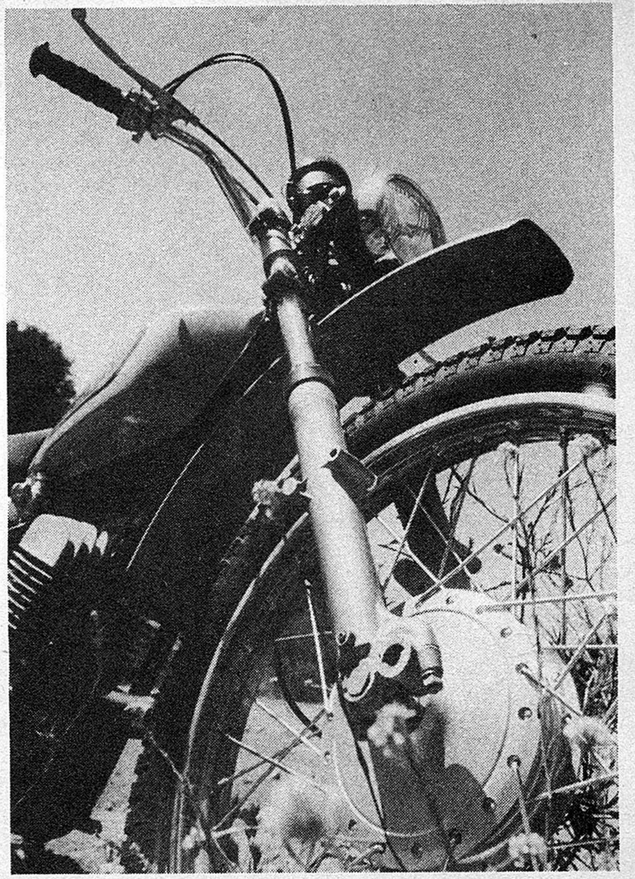
You can also change the rake on the machine, since the fork tubes can be shortened or lengthened by backing off the pinch bolts on the triple clamp. You then slide the forks to the desired position and reclamp them. Two inches of adjustment are available in steering rake.

The third and most simple of adjustments in the front suspension involves the use of a strong screwdriver to change spring tension. You remove a rubber plug that conceals the screw slot adjuster and with the screwdriver, dial in one of three positions—soft, medium or hard. The adjuster is found in the cap nuts at the top of the stanchion tubes. If that all sounds pretty confusing, remember one thing. It is. Especially when you try to figure out which one suits you the best. It will take weeks of experimenting since there are so many possibilities available in adjustments. And not one of them makes a really noticeable difference.

Starting our test bike proved to be an ex-

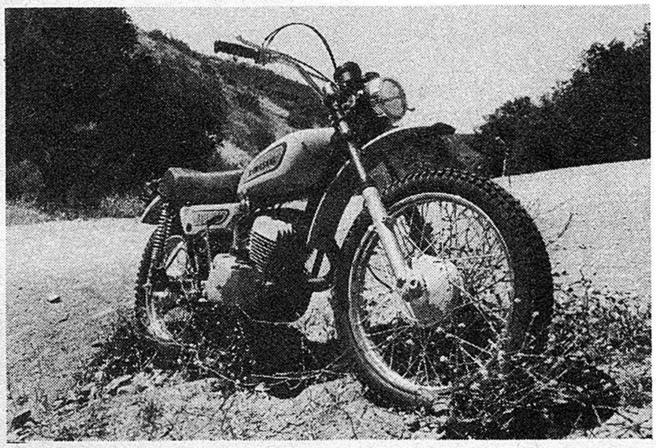


Passenger peg interfered with kick starter lever.



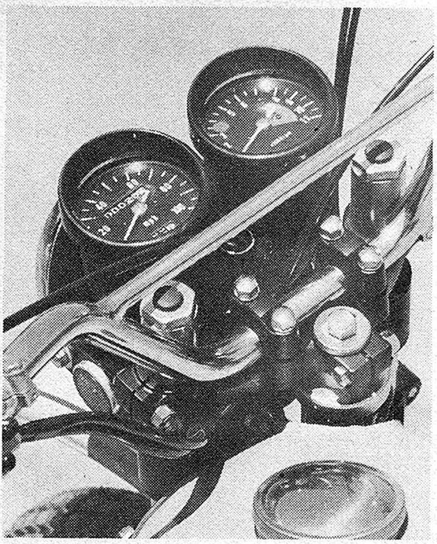
Hatta forks are completely adjustable.

Oil tanks is for Injuctolube.



Styling is one of Bighorn's high points.

Air filter and electrics are under flip-top seat.



asperating experience every time whether the engine was cold, lukewarm or hot. Using the thumb operated starting lever to richen the mixture didn't help either. Kicking over a big single like this one takes a lot of umph even if it's starting properly. Ours wasn't and tempers grew short quickly. A built-in decompression valve such as is found on the 360 Yamaha is almost a necessity and should be included on this machine. Starting is so much easier.

Adding to our frustration was a passenger footpeg attached to the swing arm that would not stay up in a 90 degree position when not in use. Consequently, our foot never ceased to make contact with the peg when kicking the starter lever. Result. Sore foot, bad language and an unstarted motorcycle.

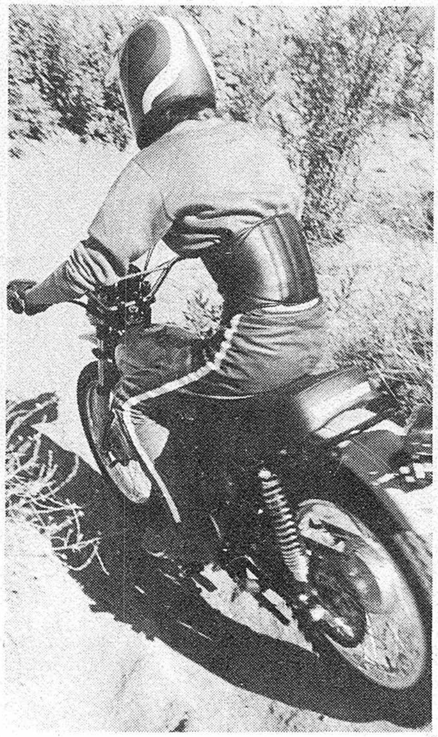
We solved the peg problem by loosening the lock nut and turning the peg downward. Then it stayed out of the way. Of course, then a passenger couldn't use it. Next time we'll leave 'em home—the pegs *and* the passengers.

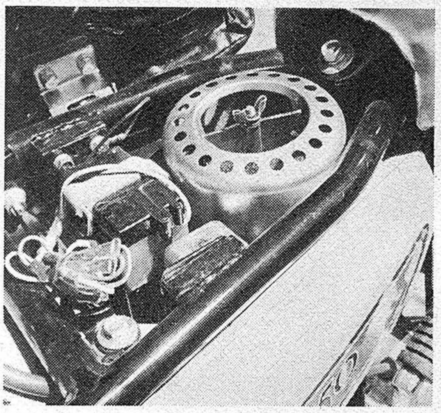
Once we got the machine going, it performed very well in the power department to say the least. On the highway, it runs beautifully at legal cruising speeds even up to 70-75 mph. No vibes were felt and handling was above par for a dual-purpose bike. It's no tourer by any means, but street jaunts aren't out of the question by any means.

Off the road, our enthusiasm began to dwindle. The Bighorn does nothing to instill confidence.

If you're really cutting a trail, you feel as though the bike is losing stability and you back off instinctively. The bike feels awkward and clumsy and the unsure feeling is compounded by the tremendous power on tap that gets you moving in one hell of a hurry. The suspension was not to be faulted and worked well under many different conditions.

Handling problems were not overly terrible and can't be blamed on the confusing front suspension but rather on frame design. The unstable feeling at speed might be traced to too high a center of gravity or some other inherent design problem.





Actually, the Hatta forks worked very well, had excellent rebound characteristics and would not bottom out.

The gearbox shifted very well up or down but good ol' neutral could not be found at all with the engine running, no matter what. And then we were reluctant to shut it off since we knew we would have trouble getting it started again. Surely these problems were limited to our test machine. They can't all be that way, can they?

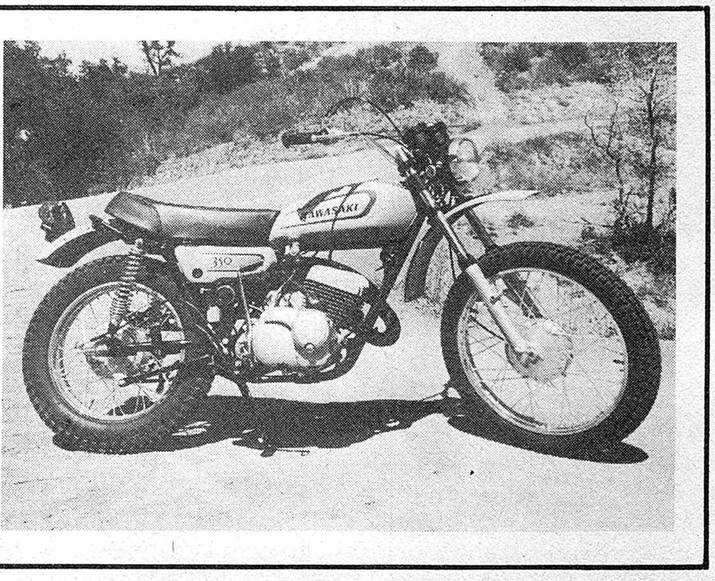
If plugging along a tight little trail is your idea of fun, the 350 won't be. It's too heavy for good maneuvering in tight spots and you need a country mile to turn a circle in. And too much power will surely dump you in short order.

On the other hand, if you like the wide open spaces, you'll dig the Bighorn. Plenty of zip will move you as fast as you dare, and lots of torque will take you to the top of any hill you set out to conquer. It's all in what you like.

The Bighorn has so many darn good features it seems a real shame that their significance is nullified by a few bad ones. But all in all, you can't really call the 350 Bighorn bad. It's not. But then again, you really can't say it's all that good. Ride it, compare it and draw your own conclusions.

350 KAWASAKI BIGHORN

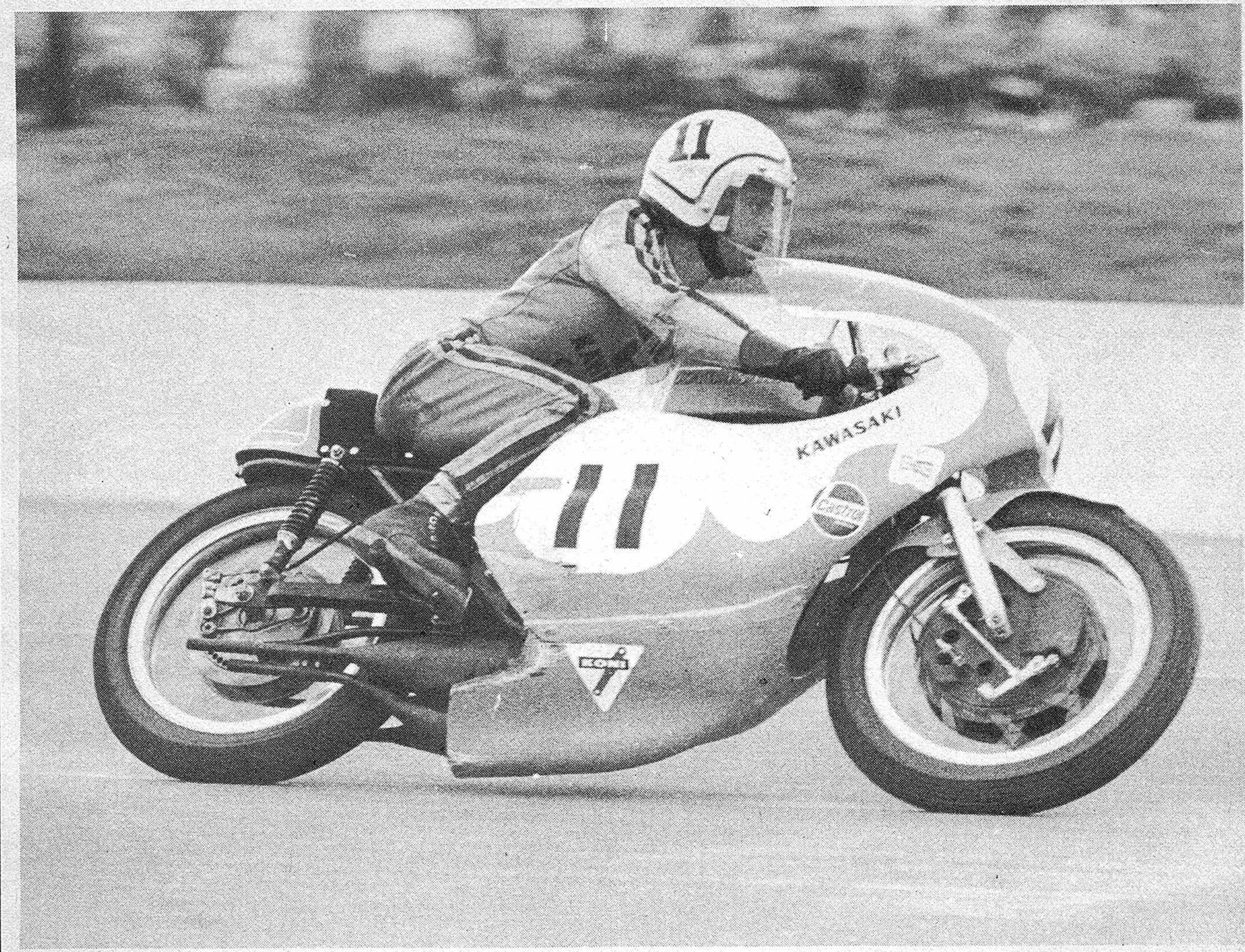
Base price	$855
Engine type	2-stroke single
Bore and stroke	80.5x68mm
Displacement	346cc
Compression ratio	6.8 to 1
Horsepower	33 at 6500 rpm
Carburetion	One 32mm Mikuni
Transmission	5-speed
Clutch	Multidisc, wet plate
Primary drive	Helical gear
Final drive	Single-row chain
Brakes	Drum
Tire size, front/rear	3.00x21/4.00x18
Lubrication	Oil injection
Fuel capacity	3 gallons
Dry weight	265 pounds
Wheelbase	55 inches
0 to 60 mph	NA
Stand, start, ¼-mile	NA
Top speed	86 mph



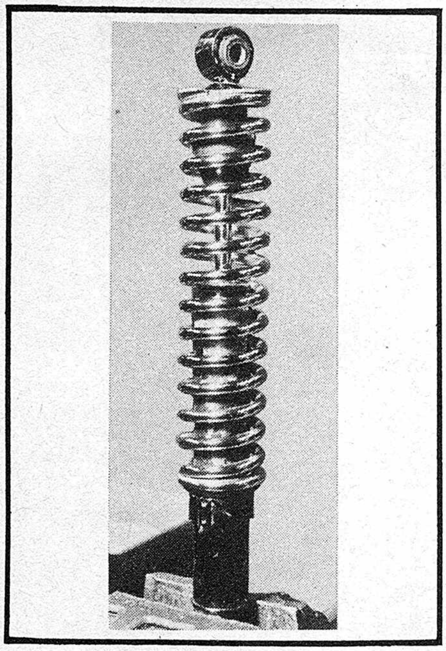
PRESENT SHOCK

specifications are all pretty much the same—until you discover all that Konis have to offer

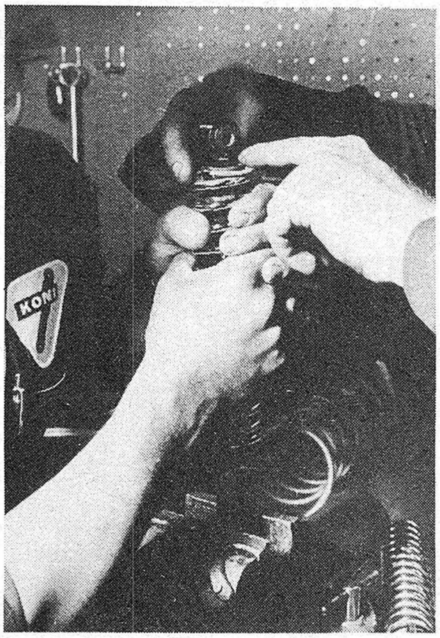
BY CARL CAIATI



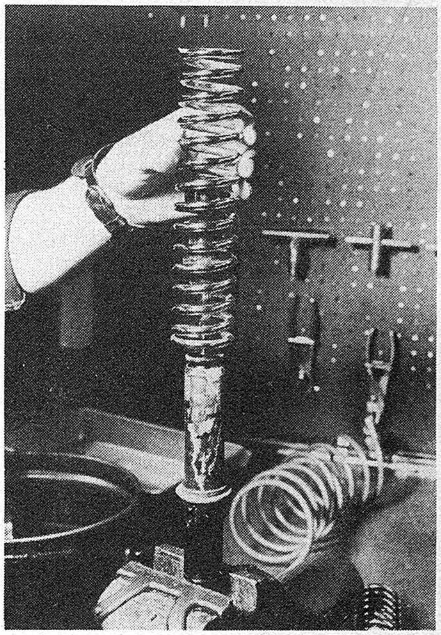
Yvon DuHamel, long time Koni booster, has been winning on Koni-equipped Yamahas and Kawasakis for three years.



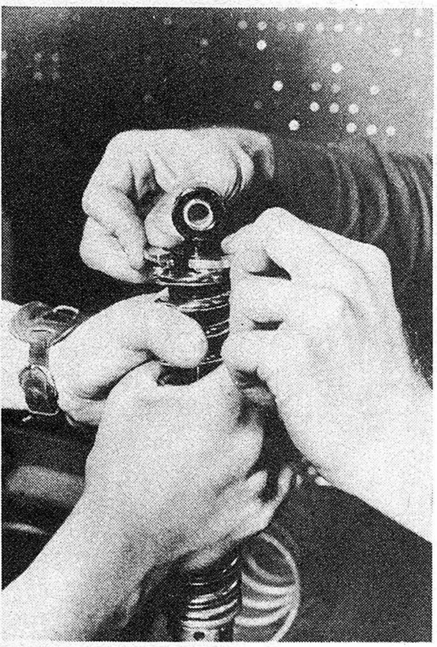
Stock unit is placed into vice and secured.



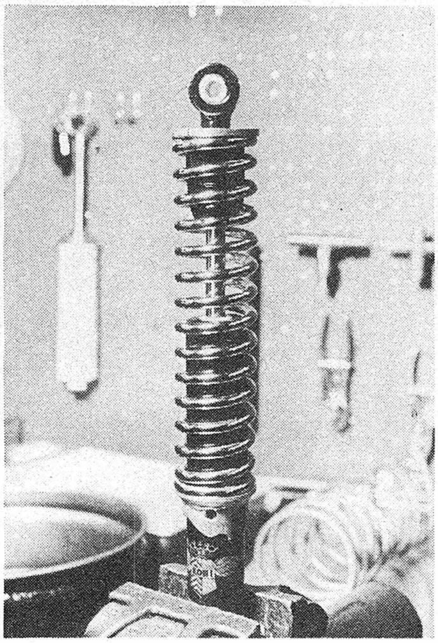
Compress springs, remove retaining crescents.



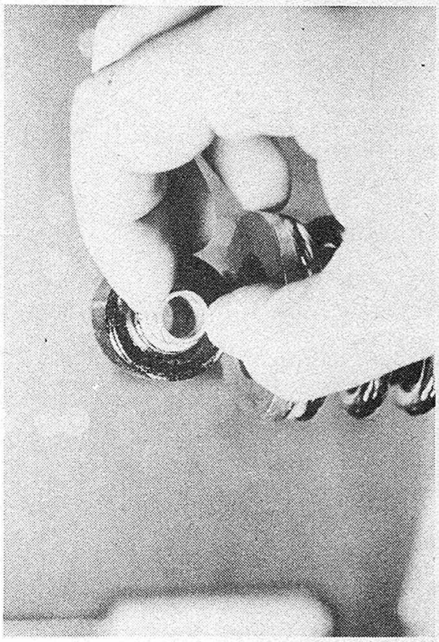
Lift off stock spring.



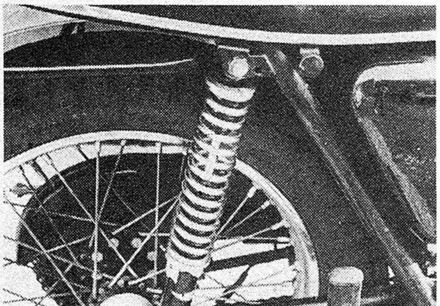
Again compress spring. Add retainers.



Now mount Koni on bike.



Insert internal reducing bushing.

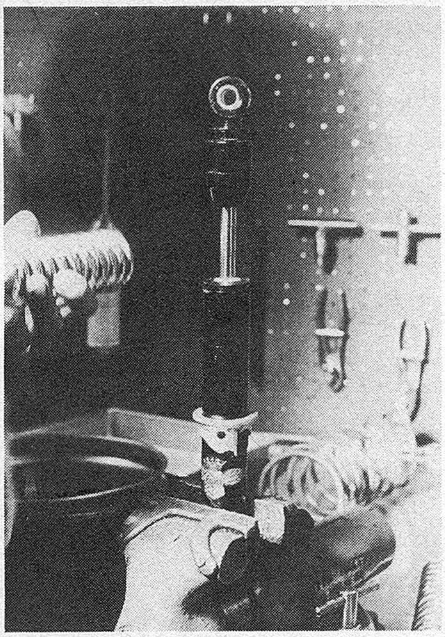


Koni secured on rear of Triumph TR-6.

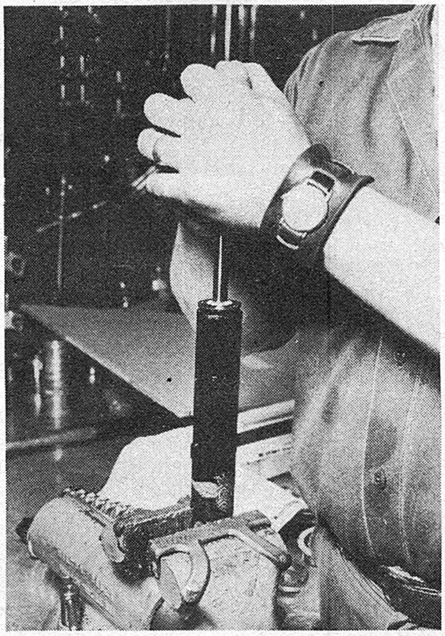
IN THE COURSE OF COVERING many of the big racing events, I have noticed more and more tiny stickers, triangular in shape with a shock absorber facsimile superimposed with the name "Koni." These stickers are particularly prevalent on the machines of the bigger, well known contenders. All bike and car racing buffs are cognizant of the Koni superiority and quality which has helped launch many a contender into the winner's circle.

In motorcycling, Konis have been consistently and successfully used by such notables as Barry Higgins on his motocross winning Ossa 250; Dick Burleson, first AMA Grand National Motocross champion; Ake Johnson, 1970 Inter-Am 500cc champion; Suzuki mounted road racing champions, Ron Grant and Art Bauman.

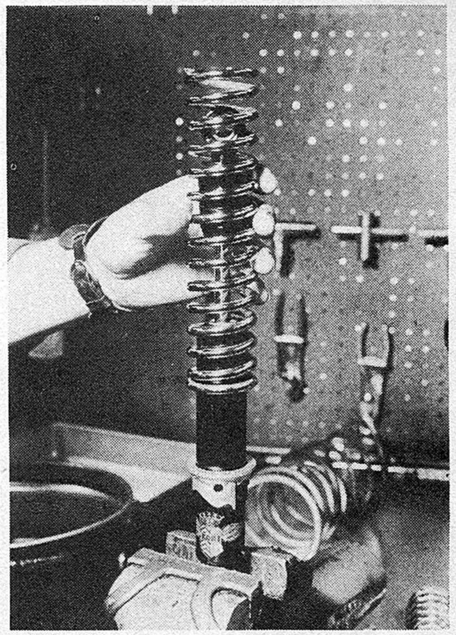
Why the sudden growing interest in Koni by both amateur and professional riders? Simply because Koni shock absorbers have been proven to offer the best handling characteristics for virtually any bike. Another distinctive feature unique only to the Koni design is the 6-way dampening adjustability. Most other shock absorbers feature what they consider a 3-way adjustment latitude which in essence is a fallacy. Actually, competitive shocks offer only a simple spring adjustment whereas the Koni units have the more desirable internal damping variability. Also sealed into the Koni shock is a specially formulated all-weather hydraulic fluid, guaranteed to perform under all extreme weather conditions. The Koni patented concept of internal dampening adjustment



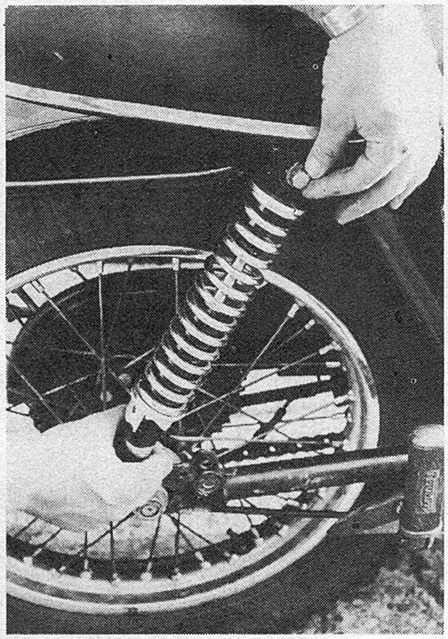
Place Koni in vice.



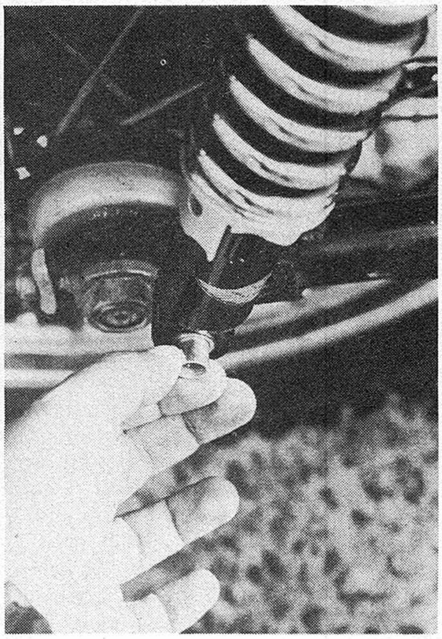
Prime piston by pumping rod at half height mark.



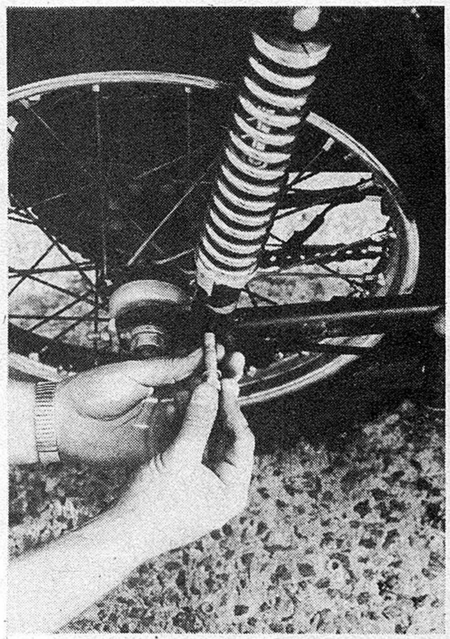
Add original springs to Koni unit.



Secure upper part of shock to frame.



Insert lower bushing.



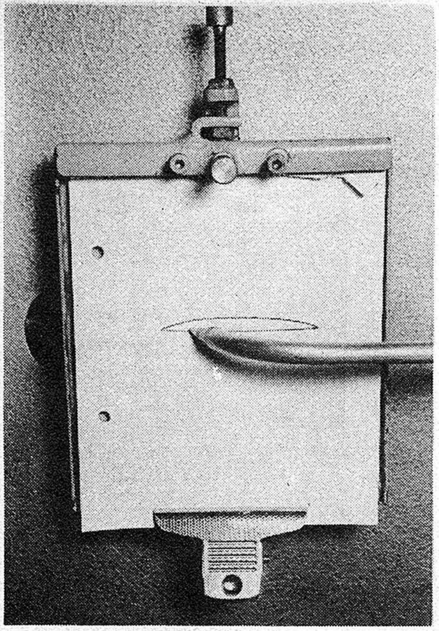
Bolt secures Koni lower eye to swing arm.

is a revolutionary feature that allows the damping force to be altered to compensate for wear or where stiffer suspension is required for greater control at high speed. Added to these features is the 3-position outside cam adjustment for regulating spring height and tension.

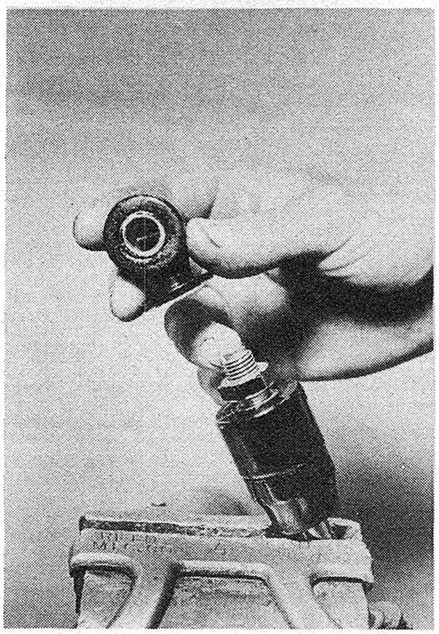
A few words should be interjected here to explain how the Koni shock absorber works and differs in operation from standard rear motorcycle suspension units. At the bump—piston downstroke—the internal specially designed piston travels within an inner cylinder. The damping fluid then flows through orifices integrally built into the piston assembly, from below the piston into the upper part of the cylinder chamber, thus equalizing pressure in the whole cylinder. Upon entering the cylinder, the piston rod displaces a quantity of oil which escapes under the piston through a footvalve assembly at the lower part of the inner cylinder to the outer reservoir tube. Resistance encountered by the oil traversing the footvalve assembly produces the bump dampening force of the shock absorber.

On the rebound stroke, with the piston traveling upward, the oil above the piston is under pressure and escapes through the same aforementioned orifices to the lower part of the cylinder. Another internal piston bypass valve opens against the pressure of a spring working in conjunction with the bypass valve. The resistance against the oil flowing through the piston produces the rebound damping force. Through the footvalve assembly, oil flows from the reservoir tube to the lower part of the cylinder below the piston, to compensate for the volume of oil displaced by the piston rod.

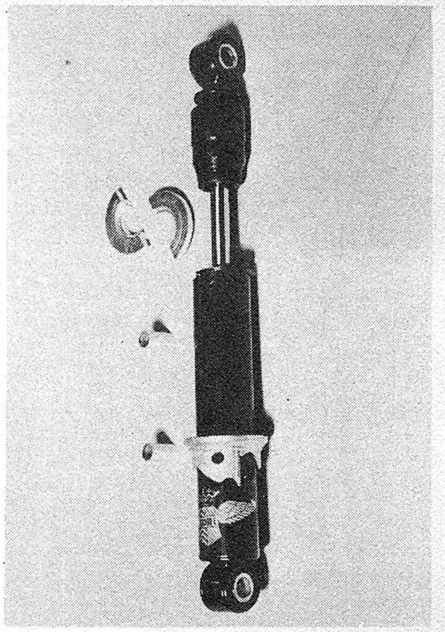
Out of the box, Konis come pre-set to their minimum damping force. Damping can be increased if desired or required. The adjustment procedure is simple and can be undertaken by anyone. To increase the damping force, the piston rod is pulled to its full height while the rubber bumper is pushed toward the shock body. If necessary, the rubber bumper is slid away from the nut by holding the top eye and twisting the rubber down the rod. Care must be exercised throughout the entire adjustment procedure so as not to damage the chromed rod. The ¾-inch locknut below the top eye can then be loosened, the



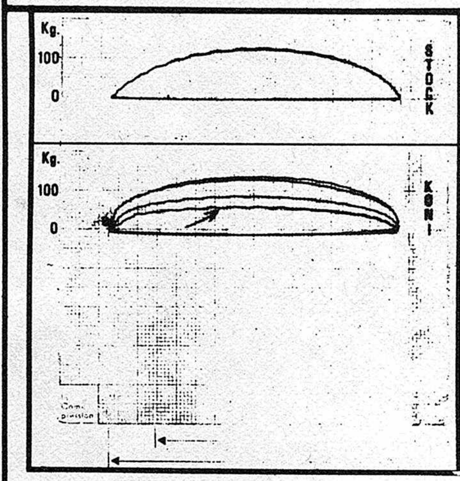
Preparing comparison graphs by dyno testing.



Top eye of Koni is adjustable for height.



Koni comes with all adapting hardware.



upper eye mount and nut unscrewed and the bumper removed.

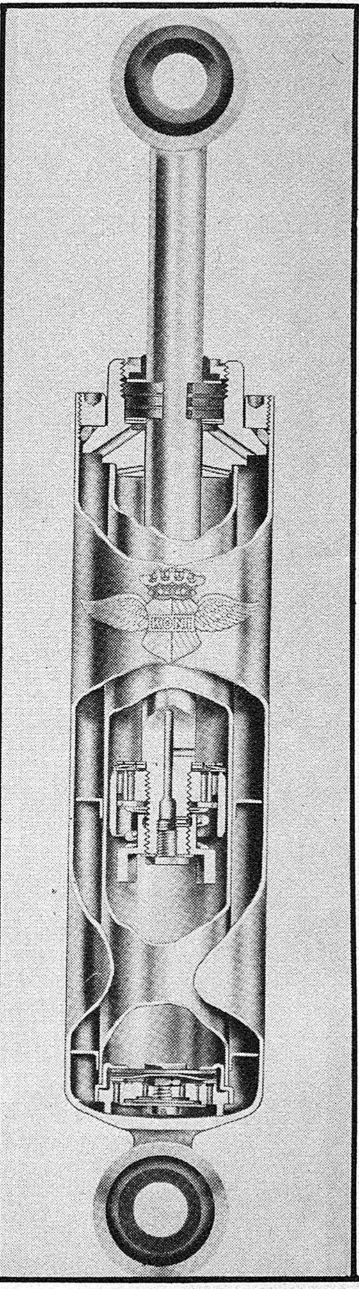
Replacing the top eye and locknut will afford a proper hand hold. Push the rod into the shock and rotate gently until a stud is felt to bottom into a socket. There are approximately 2¼ turns of adjustment. Each half turn is an adjustment, plus the full-on position. To keep the damping force in balance between Konis, always begin adjusting from the minimum counterclockwise position. Then make the desired number of turns in a clockwise direction. After making the desired adjustment, the rod should be extended at least one inch *without rotation*. The rod may then be turned without affecting adjustment.

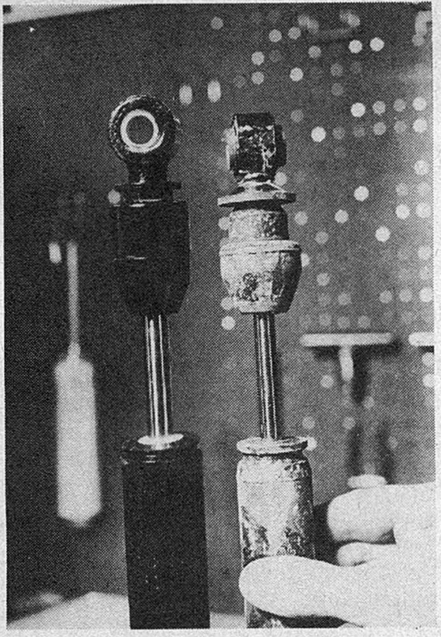
The nicest feature of the Koni, or any shock absorber for that matter, is the ease of installation, allowing the average bike owner to undertake the job using a minimum of tools. The ones included in the stock bike tool bag will suffice. First, the old stock shock absorbers must be removed from the rear frame and swing-arm. The lower shock mounting bolt should be removed, the shock pulled back off the swing-arm, pivoting on the top securing bolt. Oh yes. The whole job is easier if the bike is placed on its center stand, affording the swing arm as much up and down play as possible.

Once the lower part of the shock is disengaged the upper bolt may be withdrawn, freeing the complete unit. The identical procedure is repeated for removing the opposite shock absorber. In some scattered cases, chain guards or pipes may inhibit shock removal and will have to be removed first to facilitate the shock swapping.

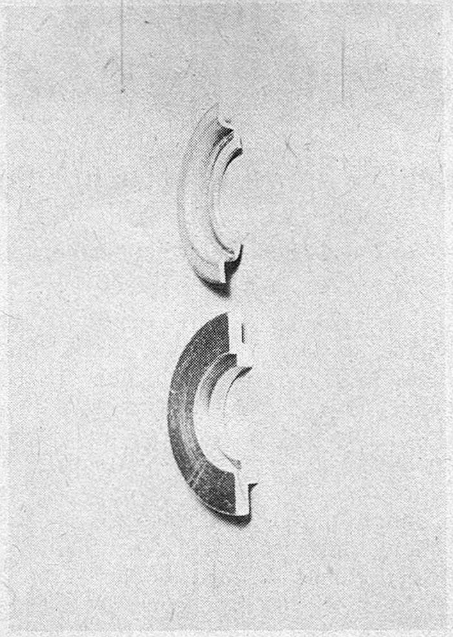
Before the stock shocks are discarded, the outer springs must be removed since Konis come out of the box sans springs. The original springs must be utilized or other accessory springs may be purchased. The cheapest and easiest way out is to use the stock original springs which are usually very adequate, since the shock absorbing inner unit itself is the part that governs the shock's damping capabilities and consequently the bike's handling characteristics.

Removal of the springs and replacement on the new Koni shocks is a simple matter, made simpler by adding an additional pair of hands to the project. In this case, one fellow using hand pressure depresses the springs by bearing down on them, while the second pair of hands remove the spring retainers. A spring depressor made specifically for this purpose is the ideal way to go. But the extra pair of hands does the job adequately and cheaply. Before placing the spring onto the Koni, the piston must be primed by pumping the piston rod up and down at around mid-position. This results in the bleeding out of excess air. Damping is set to the desired resistance using the procedure explained before. The piston rod is extended fully, fitting the springs over the entire shock barrel. Placing the top spring retainers into position will securely lock the springs into place. Using a thick rod or screwdriver, the top

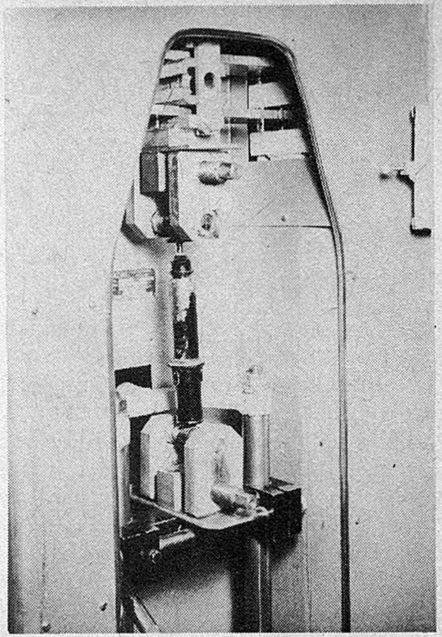




Koni on left has much thicker piston rod.



Koni retainer, left, is also meatier.



The shock dyno tester at work.

eye is turned clockwise so as to line up with the bottom eye. At this point the complete assembly is ready for installation. The new Koni shock absorber units are installed following the same procedure for taking them off—in reverse, of course.

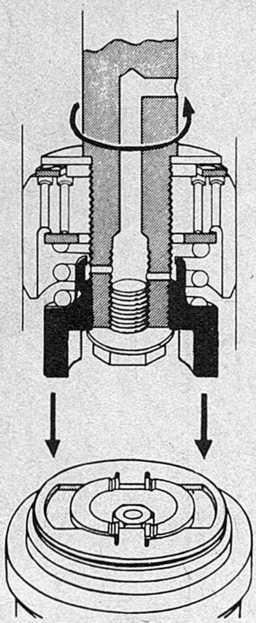
Due to the many adjustment features of the Koni, it can be used on virtually any machine. The universal Konis have top and bottom eyes that contain dual bushes. The smaller insertion bush will accept a bolt of ⅜-inch diameter.

For machines with 12mm mounting studs, the inner ⅜-inch bushing can be discarded. The Koni units accept springs with a 1.5-inch inner diameter. In scattered instances where the springs are too small to fit over the Koni barrels, larger springs may be purchased at many of the better motorcycle dealers.

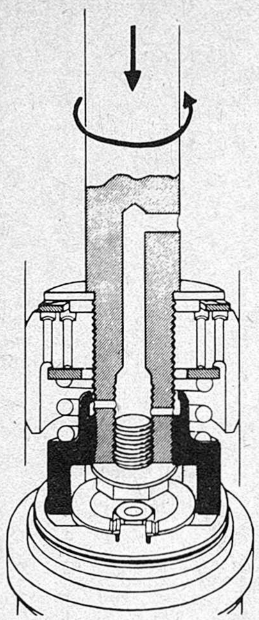
For those of you who dig optimum handling and improved cornering, Koni shock absorbers are the ultimate way to go and will remain so until something better comes along. They cost a little more but they will outperform and outlast the conventional shock absorbers found on most motorcycles today.

Adjusting Procedure

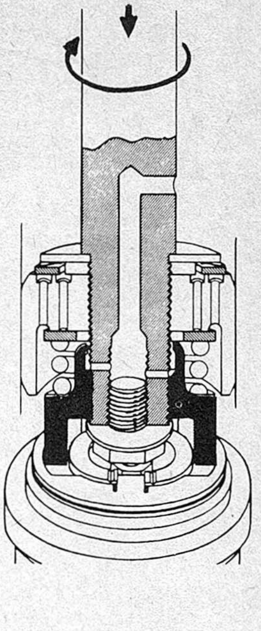
KONI shock absorber



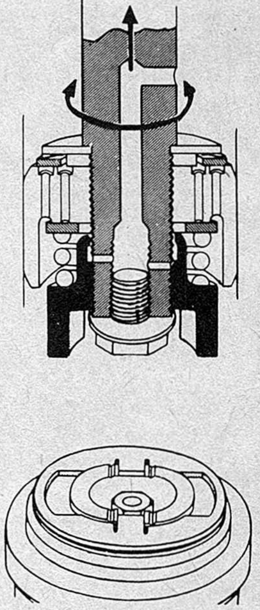
Fully collapse the shock absorber, at the same time turning the piston rod slowly to the left until it is felt that the teeth of the adjuster nut are engaging the recesses of the footvalve assembly.



Continue to turn gently to the left until the rotation stops. Do not use force or attempt to turn further to the left, once resistance has been felt. At this point you are assured that shock absorber is in the unadjusted or new position.



Now keeping the shock absorber collapsed, begin turning in the opposite direction, to the right. You will be able to make four half turns of 180° and a final quarter turn of approximately 90° to full hardness, each one of which is an adjustment compensating for approximately 20,000 miles of riding, depending upon the usage. You will know when you have reached the maximum adjusting position because you will encounter another stop. Do not force.



Pull the shock absorber apart vertically without turning for about ½" to allow the teeth of the adjuster nut to disengage. The piston rod can now be turned freely. Reassemble in reverse order. Be sure to install the rubber bumper and *do not shorten it*. The shock absorber will be permanently damaged if the rod is depressed too far when ridden.

Chain Maintenance

How soon will you be walking home because of a broken or thrown chain?

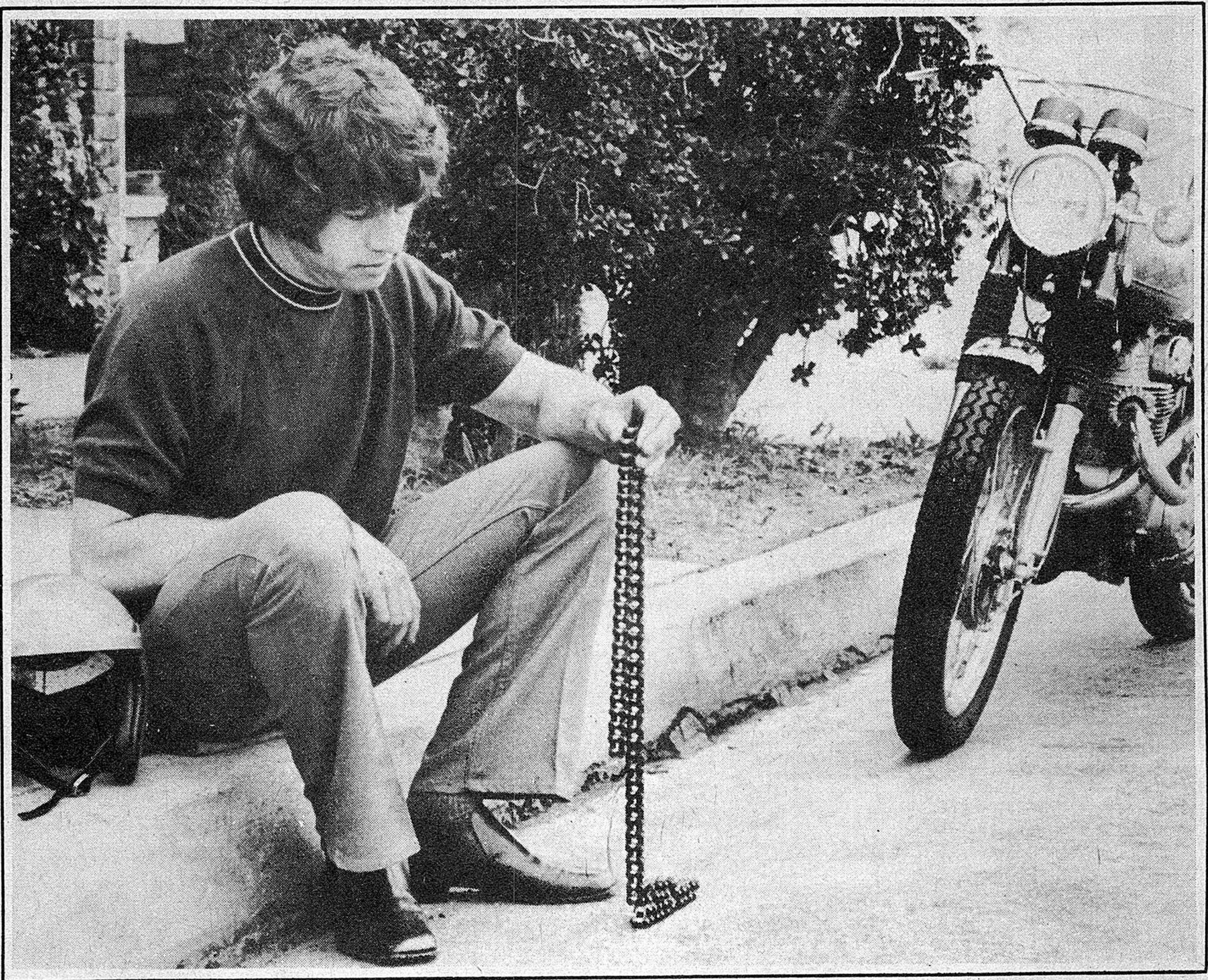
by David Anderson/World Features

IF YOU HAVE EVER pushed your bike five miles back to town or left it out there and made the trip on foot wondering if it would still be there when you returned, you already appreciate the need for proper drive chain maintenance. That instant, when at 60 mph. the chain lets loose in the engine casing, can leave an indelible mark on your mind—hopefully not on your body. To understand how that can happen, let's look at the chain, its makeup and its proper maintenance.

First of all, what makes up that sometimes diabolical chain? A close inspection will reveal it is made up of two types of links—the axle link and the roller link. Each roller in the roller link is actually two, an inner roller and an outer roller. The outer link contacts the sprocket directly. The axle links connect the roller links to form the chain and serve as axles for the individual rollers. It's that simple.

Most of the problems connected with the chain can be traced directly to improper care. Before discussing the procedure for proper chain care, let's look at ways of getting the kinks out. Seized links or a kinked chain is usually the result of improper lubrication and foreign matter fouling the metal-to-metal moving surfaces. The first step in freeing them is the use of penetrating oil. Since this often is not enough, the careful use of a cold chisel to spread the axle link away from the roller link will complete the job. Another method is to apply the cold chisel across the axle link clips thus forcing out the kink. Either way the movement will allow the oil to penetrate and do its job.

Periodically, the chain should be checked for wear. With the chain off



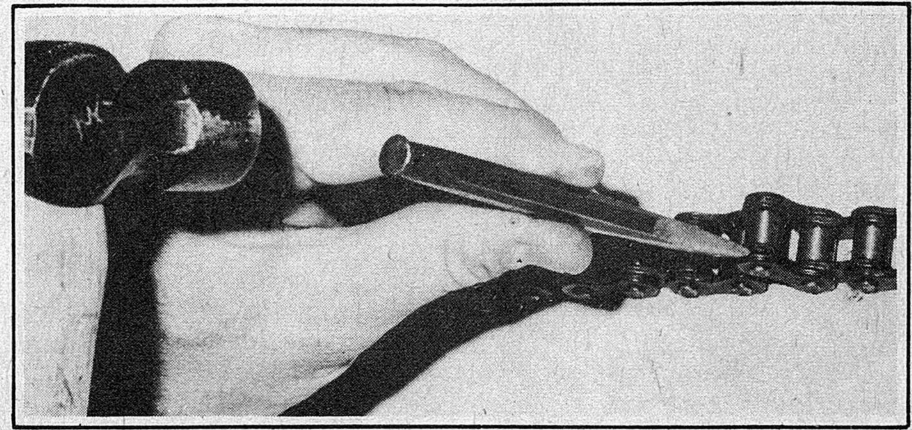
A properly maintained chain will not leave you stranded wondering if you should walk and leave your bike or push it into town.

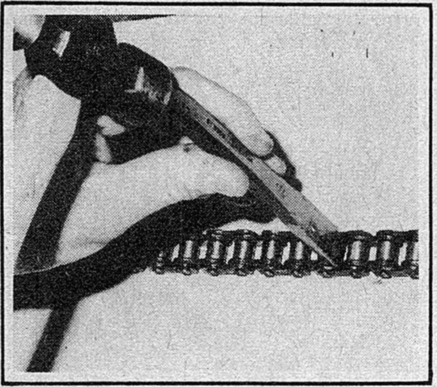
the bike, lay it out flat. Now holding both ends, bend it in the direction perpendicular to its normal axis. In other words, sideways. All chains will have some bend due to the clearance between the metal-to-metal moving surfaces. As the chain wears, the bend will become greater. If you can come near to touching the ends of the chain together throw it away. While you are checking the wear, inspect each axle link clip to see that it is not cracked, badly worn or about to pop off its axle.

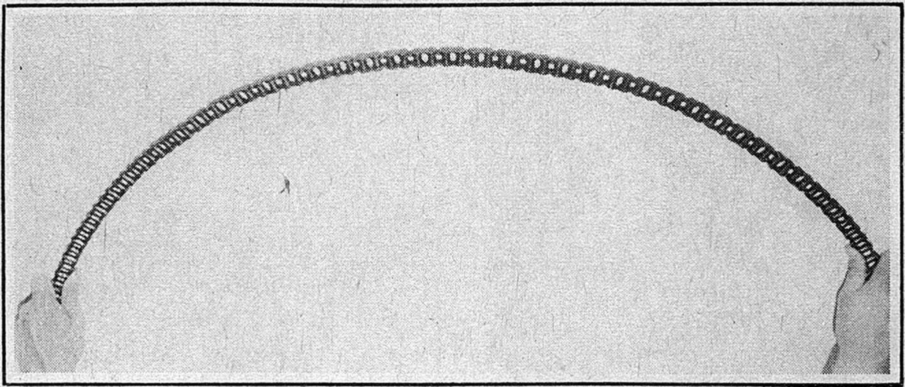
The chain, once checked and found to be sound, is ready for cleaning and lubrication. Carburetor cleaner is one of the most effective chain cleaners. Degreasing solvent or aerosol chain and electrical contact cleaners may also be used. A stiff brush works well with the solvent in removing stubborn dirt and foreign matter. By cleaning the chain thoroughly you have eliminated one of the major sources of wear. Besides being dangerous, a gummed or dried chain will seriously impair the bike's performance, gradually turning it from a soaring eagle into a crawling snail.

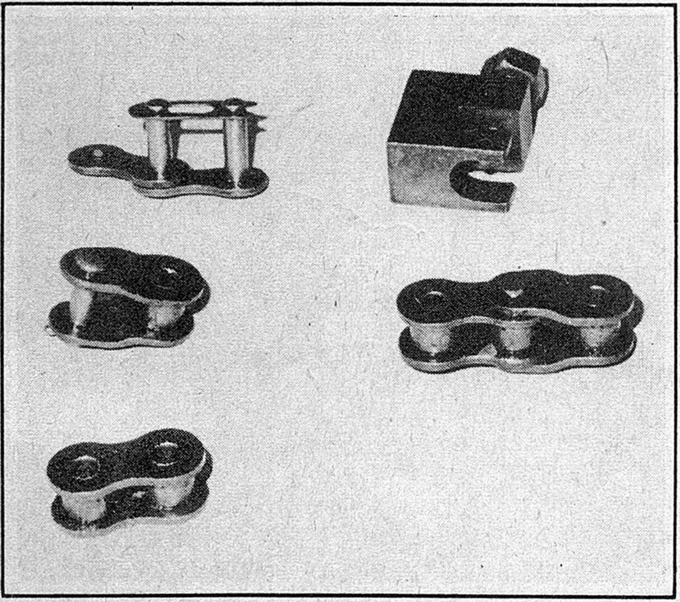
It is important that the chain always be lubricated with an appropriate chain oil consistent with the bike's use. There are many commercially available on the market. Each of these has its own specific additives thus its own unique properties.

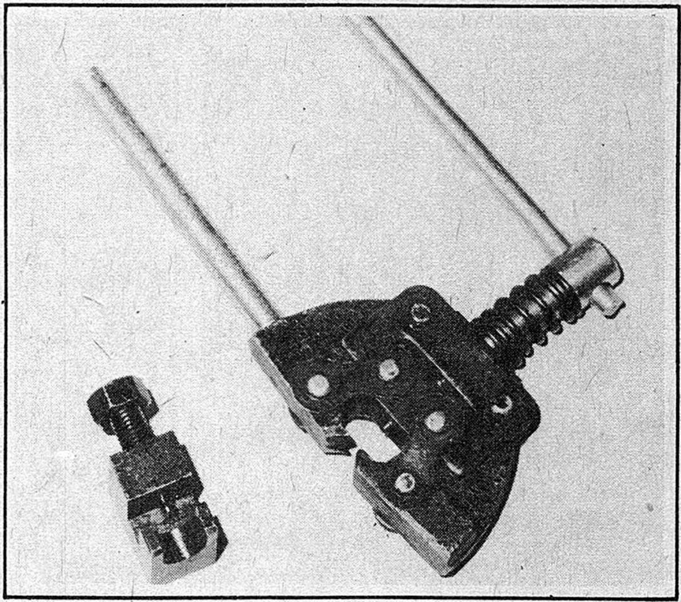
Alan Wurtzel, president of Cycle Products West in West Los Angeles, California is an active desert racer. He uses a specially compounded lubricant that is heavier than most commercial preparations. His own personal witch's brew is inex-


When penetrating oil does not free the chain, use a cold chisel to carefully spread the axle link away from the roller to remove kink.


Cold chisel across axle link clips is another method of loosening a seized link.


With the chain lying flat hold both ends and bend it into direction perpendicular to its normal axis. This chain is still good. A worn out one would have much greater bend.


A good chain kit for emergencies contains a master link, a chain breaker, a link and a half, a roller link and a half link.


The smaller chain breaker is good for your emergency kit. If you plan to do a great deal of chain modifying the larger one is better.

pensive and easy to prepare. To make it, all you need are three tubes of mechanic's grease, available at any auto parts store and three blocks of parafin. These ingredients are placed in a container and heated until it liquifies to the consistancy of a heavy motor oil. Put a wire loop in the end of the chain and drop it into the brew. The loop gives you an easy place to grab the chain with your pliers without burning your hands.

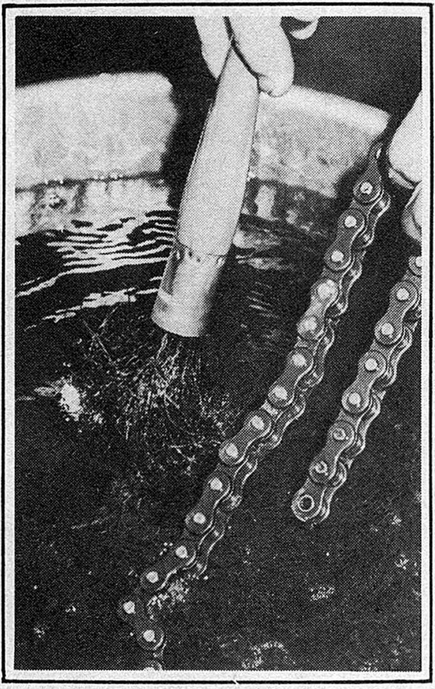
Once in the brew, the chain should cook for about an hour, enabling the lubricant to permeate all the nooks and crevices. When it has finished cooking, remove the chain and hang it on a hook permitting the excess lubricant to drip back into the container as it cools. This mixture can be used again and again so don't throw it away.

Before putting the chain back on the bike, check the rear sprocket. A worn or improperly lubricated chain causes rapid sprocket deterioration. Wear found here usually indicates wear in the engine sprocket as well. In addition to inspecting the teeth, be sure and check the body of the sprocket for cracks. As a final check when you reinstall your chain, spin the rear wheel to see that the chain meshes smoothly on the sprocket. The rollers of a worn or stretched chain will not position themselves properly.

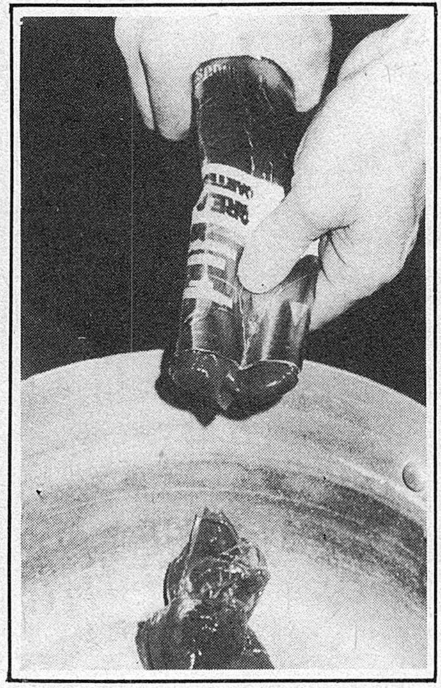
When reinstalling the chain, insure that the axle clip retainer of the master link is facing opposite the direction of rotation so it won't work itself free. Adjust the tension to give ½-inch of play when the bike is off the mainstand. If the bike is on the mainstand when you do this, the chain will tighten like a banjo string when you get onto the bike.

A chain that is too loose always results in excessive wear and presents the possibility of being tossed off

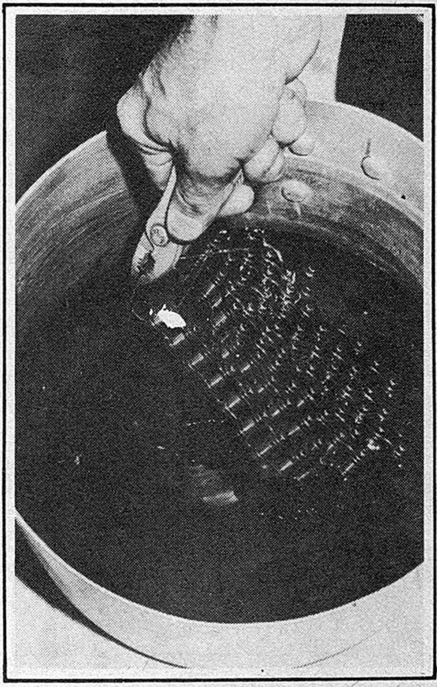
(Continued on page 68)



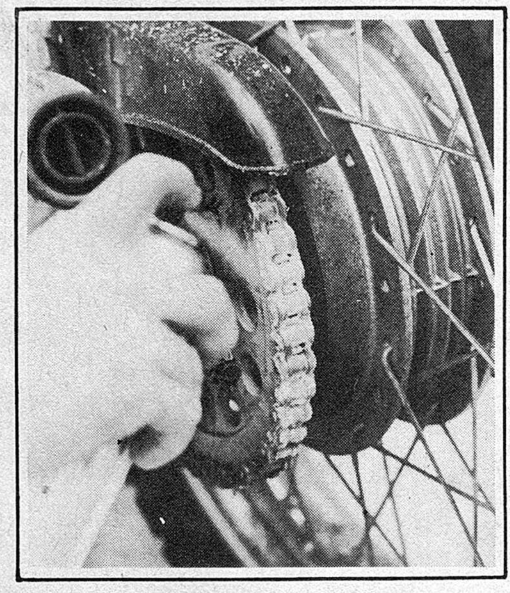
Carburetor cleaner gets most of the grease and crud off. Wire brush removes the rest.



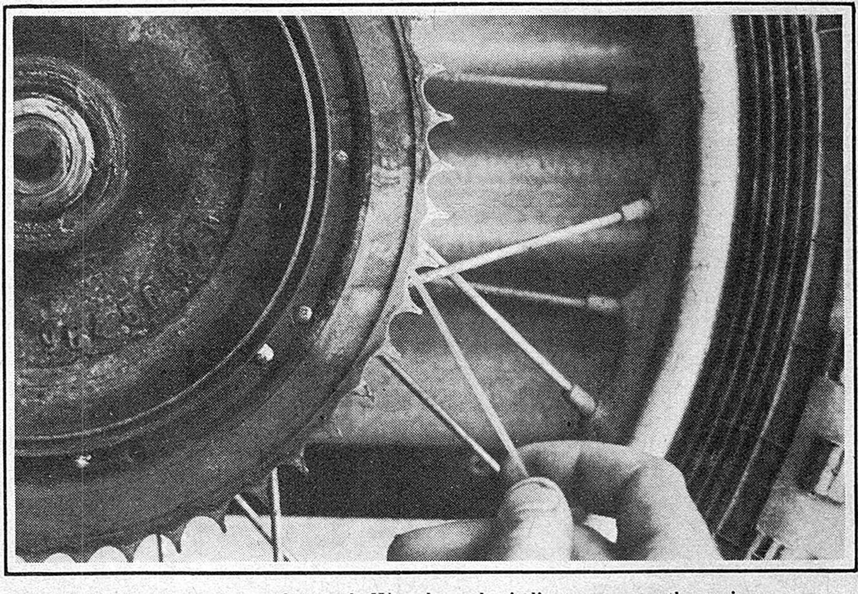
Squeeze out 3 tubes of mechanics grease, heat until it liquifies to motor oil consistency, then add the parafin.



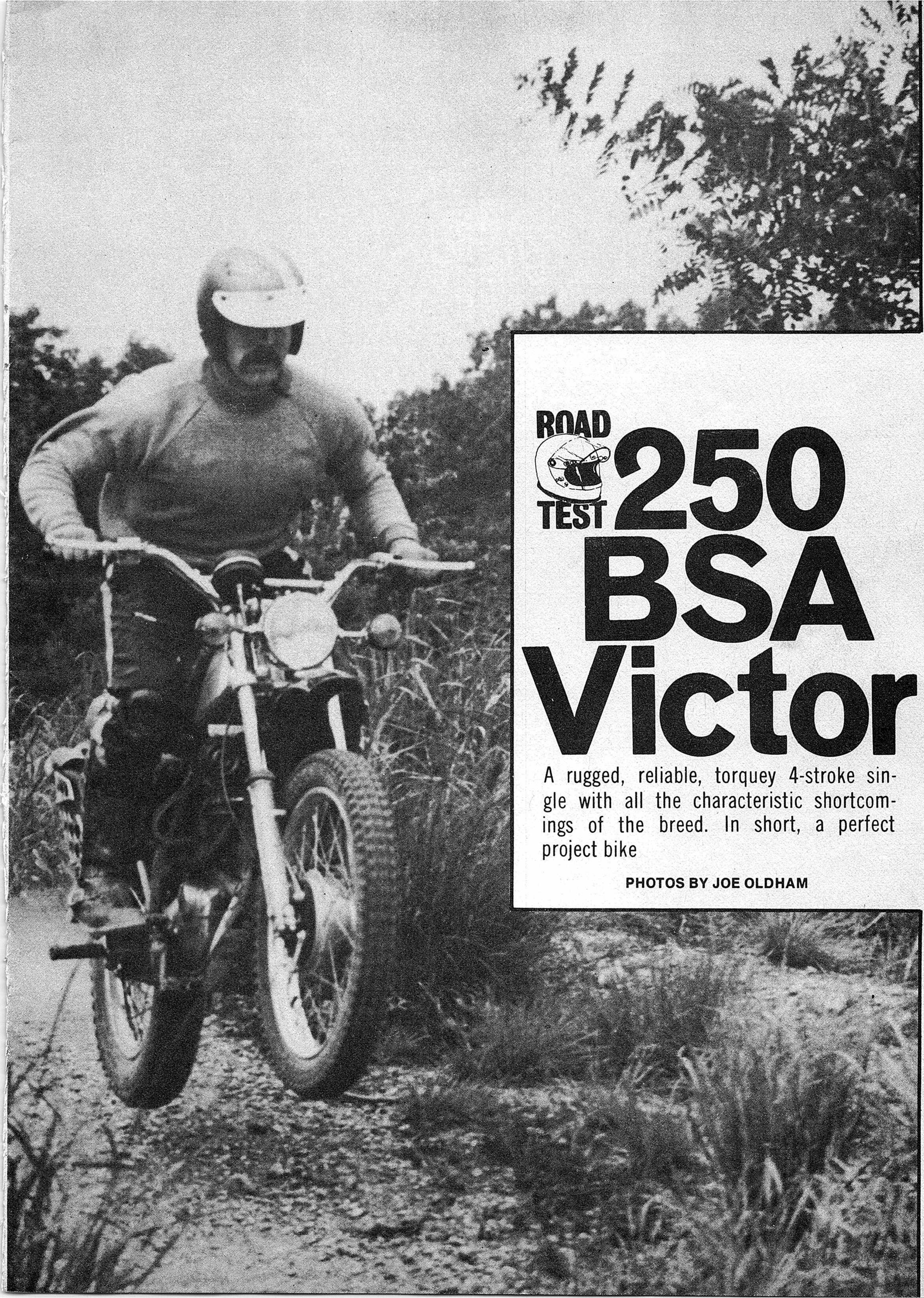
Put chain into hot lubricant. Wire loop and pliers is convenient way to handle chain.



Aerosol lubricants take the bother out of chain lubrication.



Carefully inspect the rear sprocket teeth. Wear here also indicates wear on the engine sprocket. When you reinstall the chain, spin the wheel to see that the links mesh smoothly on the sprocket.

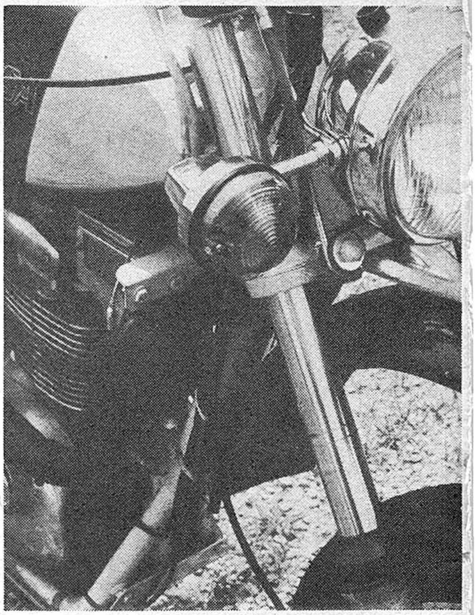


ROAD TEST

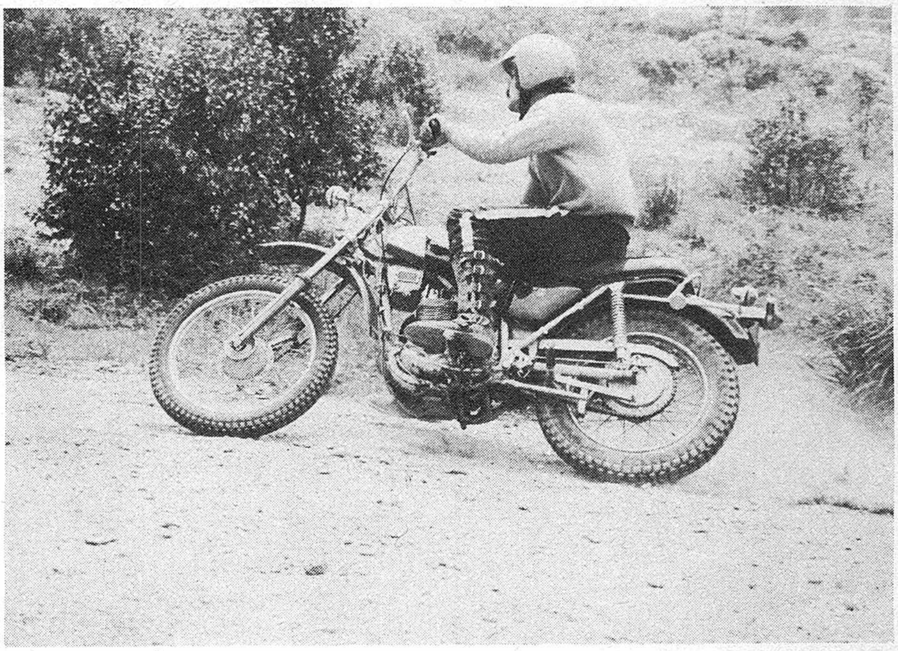
250 BSA Victor

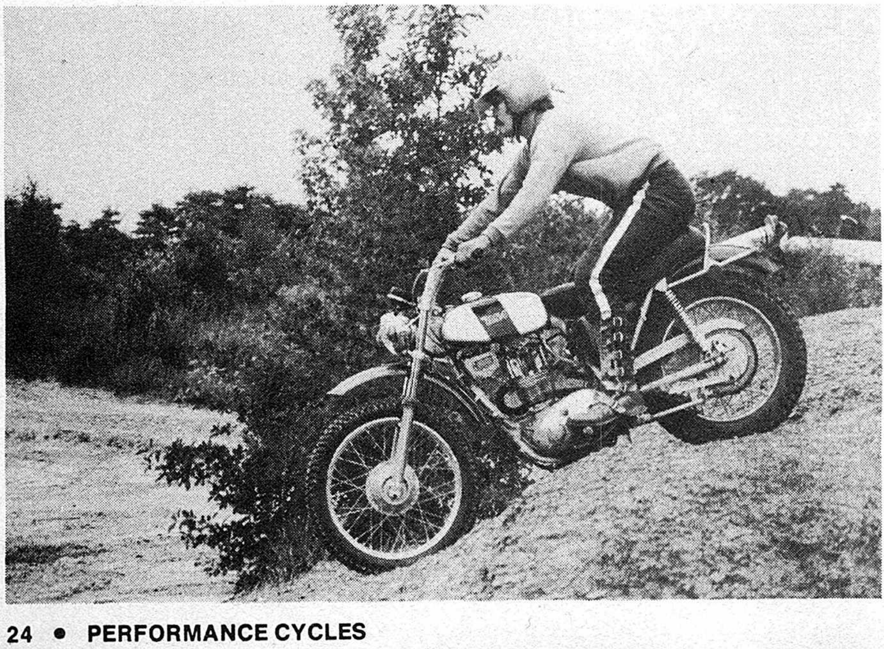
A rugged, reliable, torquey 4-stroke single with all the characteristic shortcomings of the breed. In short, a perfect project bike

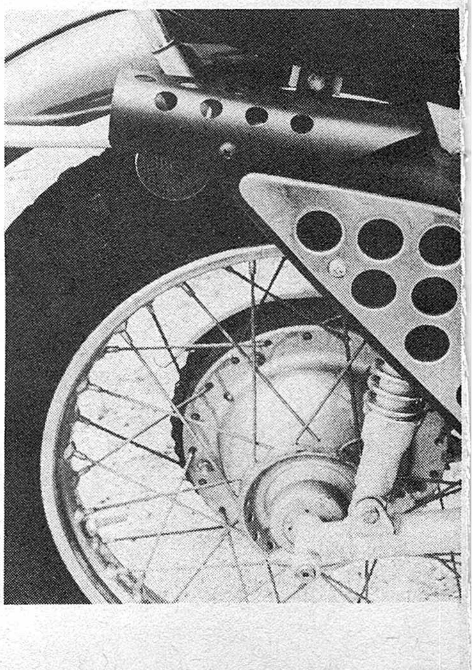
PHOTOS BY JOE OLDHAM

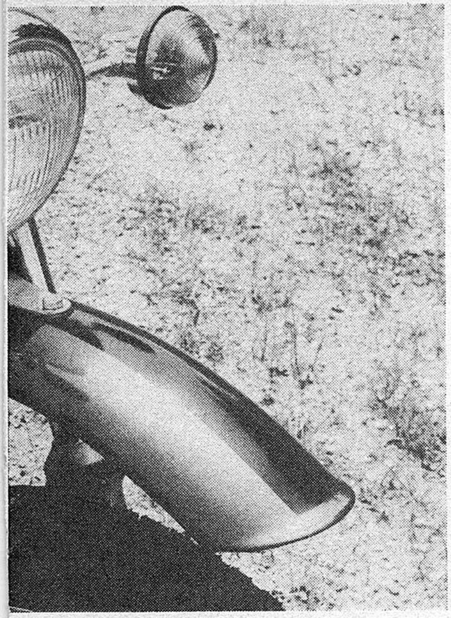


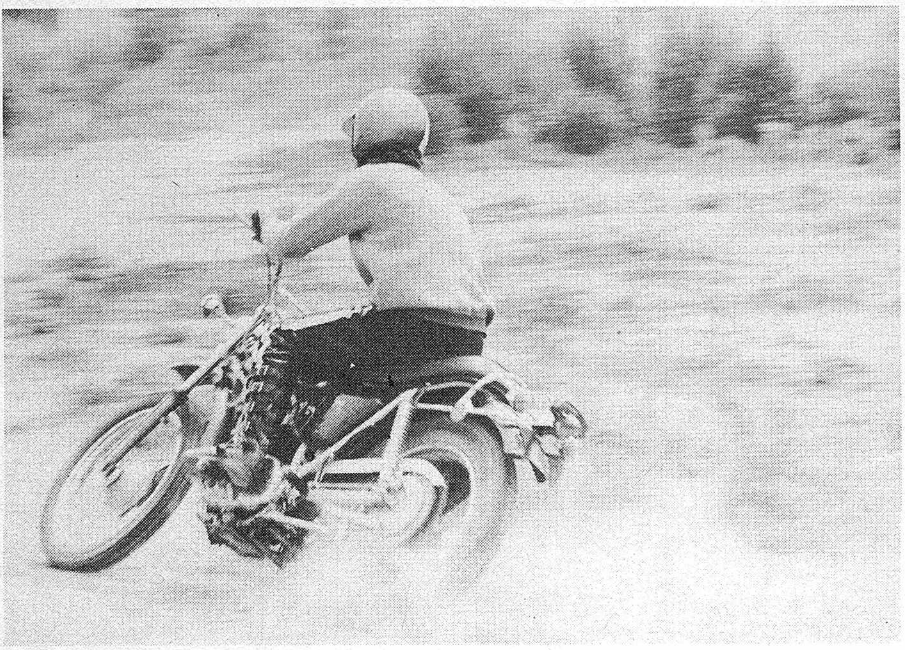
"The engine takes everything you can dish out, and doesn't even breathe hard."



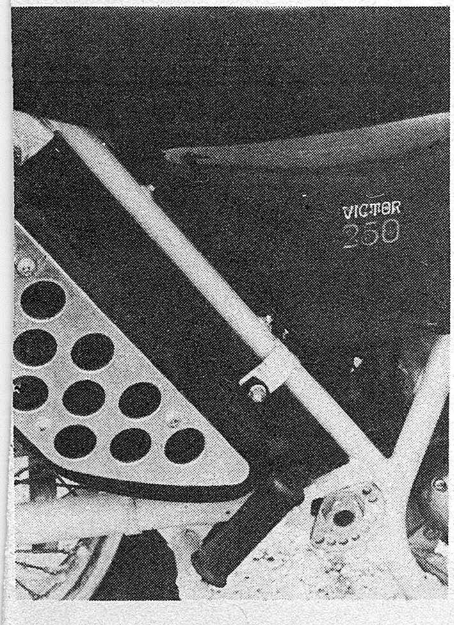




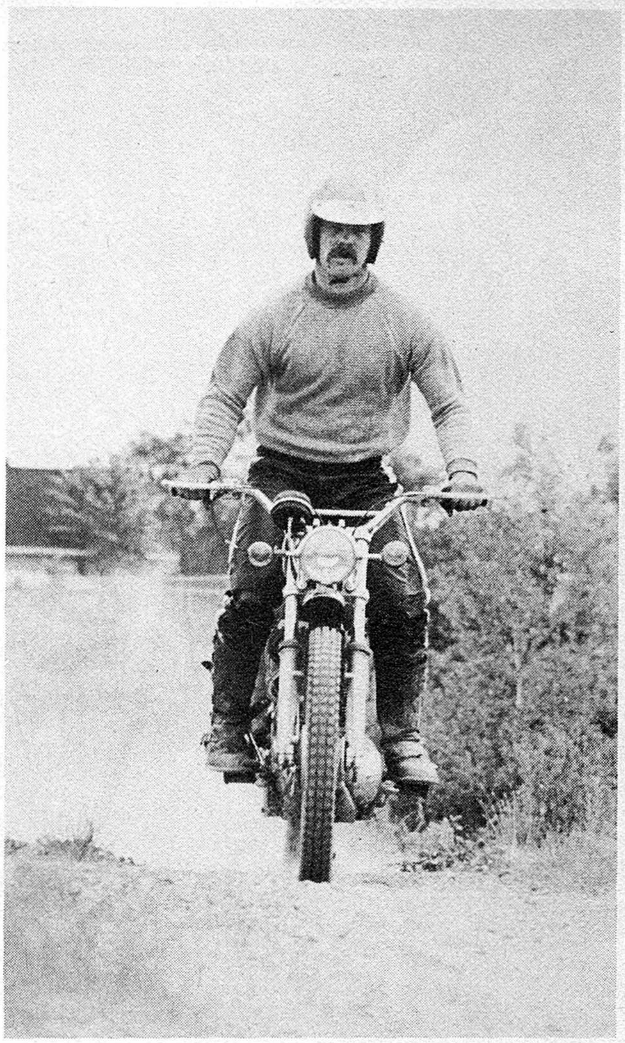




"The Victor was a bitch to start from the first day we picked it up."



When shocks are set at stiffest setting they iron out the road.



Bike needs stiffer gearing and less weight.

DAMN, IT'S ENORMOUSLY tough! And reliable and torquey and heavy and all the other things you'd think a BSA 4-stroke dirt bike would be. And why not? After all, BSA has a hard-earned reputation for building 4-strokes that incorporate all the characteristics of a 4-stroke dirt bike—good and bad—and you don't think they're going to change now, do you?

And why should they? Take the engine, for instance. You look for the origins of the 250 single and you have to go back about 12 years to find it. It first appeared in the old C-15 BSA and has had only refinement-type changes since then. It's the type of engine that you just can't kill. It'll take everything you can dish out and not even breathe hard. It's not all that powerful in stock tune, producing 22.5 horsepower at 8250 rpm.The bike doesn't have a tach, so you just shift by ear or when the bike is all wound out. This is the kind of abusive treatment the 250 seems to thrive on.

Even more important than the 22-odd horsepower is the 15.8 lbs./ft. of torque pumped out at 7000 rpm. That's a big bagful for a 250cc machine. Even with the relatively tall gearing that comes stock on the Victor, hillclimbing all except the steepest grades is a blast. You have all that low end torque punching out to the rear wheel.

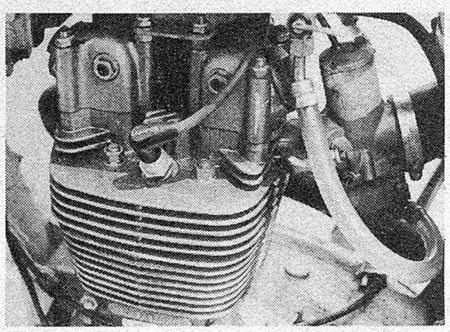
However, for serious dirt work, the gearing is way too high. A better choice would be the rear sprocket from the 500 MX and a 13- or 14-tooth countershaft sprocket. This would give the BSA even more low end dig which is what you need for all-out dirt riding. This is exactly one of the changes we intend to make on this bike as part of a project motocross thing we have set up. You can read more about it on page 48.

When the 250 first was introduced a decade ago, it had a very disconcerting habit of spewing out its guts every couple of thousand miles. Of course, reliability has improvement maybe 10,000% since then but still BSA continues to make changes to increase the reliability of the engine. For instance, this year they've redesigned the oil pump to increase the amount of oil flow through the engine. With the oil flowing more rapidly, it stays cooler and so does the engine—a major factor in engine longevity. Also new is the oil filter which is now big enough to keep all the garbage floating around from getting to the plain bearing lower end.

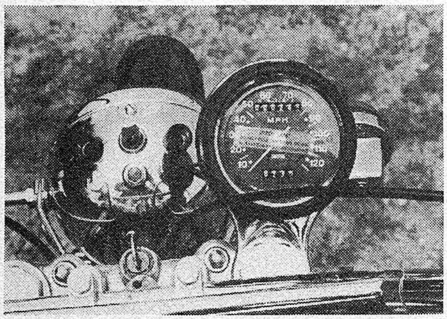
This year, the Victor has no oil tank. Instead, the supply is in the main frame tube and the frame is all new—a direct descendent of the racing BSA-Triumph frames of the past few years. The filler is right in front of the gas tank and old oil is drained from the bottom of the main frame member just behind and below the transmission. The engine still uses a dry sump system.

What all this adds up to is an engine as rugged as an armored personnel carrier with maybe about as much low end torque. However, the engine has no top end at all. The cam is a mild grind which makes for plenty of low end but no top end. The single R-928 Amal carb doesn't help things much either. This is another area we'll try to improve on our project bike.

In drag races on the dirt, the 100 Kawasaki that we test elsewhere in this issue was able to stay with the BSA



Engine puts out 22.5 horsepower.



Max. Speedometer reading is a joke.

right up to the Kawasaki's top speed of about 69 mph. At this point, the taller gearing of the BSA would let it wind out further and it would pull ahead to its top speed of 86 mph.

One Wednesday during our test period, we took the BSA Victor to Madison Township Raceway Park in Englishtown, New Jersey for a few runs through the quarter, not because the Victor is a drag bike by any stretch of the imagination but just as a yardstick to its actual measured performance.

After six runs through the quarter, the Victor managed a best ET of 17.4 seconds with a trap speed of 75 mph. Not very outstanding for a 250cc machine. We've tested 250s that have blasted through in as little as 15.9 seconds.

Part of the answer here is the weight of the bike. The dry weight is 287 pounds. Add 2½ gallons of gas, 4¾ gallons of oil and a test rider and you're up over 400 pounds easily. As part of the project, we'll be lopping off a lot of the unnecessary weight of the Victor.

All this weight doesn't help handling either. Frankly, the bike handles well for one weighing over 300 pounds ready to run. But compared to other 250cc dirt bikes, improvements can be made. The weight wouldn't be so noticeable in the dirt if the gearing were a lot stiffer and the bike responded faster to the throttle. However, this is not the case. You crank on throttle and wait for what seems like many seconds before anything really happens. Stiffer gearing would solve this problem quickly. Lopping weight off would make the BSA Victor an excellent dirt bike.

Along with the frame, the front forks are new this year. They're made of light alloy and have conical hubs, both moves to save weight. The forks are a bit soft but that's solved with a little heavier oil. On the street, the front forks make the Victor perhaps the best handling of all the dual-purpose bikes we've tested. In any case, it's the most streetable of the bunch.

The rear shocks are Girlings with integral springs. They were too soft for dirt or street riding unless set to the stiffest position. Then the bike became very responsive to steering imputs and could be thrown around with some confidence.

The Victor comes with Dunlop semi-knobbies front and rear which are not good enough for serious dirt work and certainly not the answer for prolonged street use. However, they're fair in both elements and the serious dirt rider will want to go to full knobbies anyway. An oddity on the Victor is the front rim which is 20 inches in diameter—a bastard size. Most bikes use an 18-, 19- or 21-inch front wheel. Tire selection is not exactly the greatest in a 20-inch size.

The Victor was a bitch to start from the first day we picked it up at G&D Cycles in Edison, N.J. with three miles on the odometer until today when we've already begun converting it for small displacement motocross racing. Most of the time, the engine won't start at all with the kickstarter—and this is especially true of the first start of the day. We always had to push start it the first time each day. After the first start, it still took about 10 kicks to fire it up even when warm.

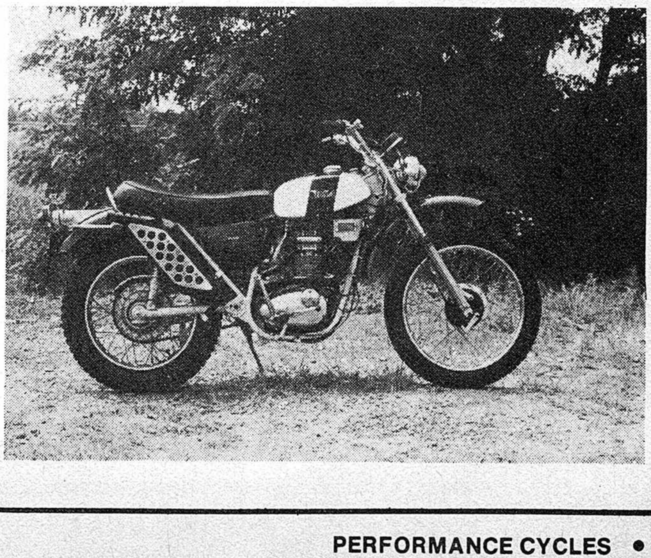
The gearbox, on the other hand, was always perfect. The BSA can get away with a 4-speed trans since it puts out so much torque. The ratios are well spaced and the box shifts perfectly every time. We found it impossible to miss a shift even when kicking through gears while standing on the pegs and not using the clutch.

And how about the Victor's new styling? Out of sight, right? We thought so. The alloy tank and candy apple red trim and fenders flat make it as does the gray frame. We don't particularly like the styling of the stock exhaust system but gimmicks seem to be the way to go these days. If you're a serious rider, you'll be discarding it anyway.

So that's the 250 BSA Victor. Tough, dependable, rugged but not spectacular. It'll get the job done. There's no question about that. It'll just take its time doing it. But we see a lot of potential in the Victor and we intend to prove in building our project bike. Stick around. The fun is just beginning.

250 BSA VICTOR

Base price	$836
Engine type	OHV 4-stroke single
Bore and stroke	67 x 70mm
Displacement	247cc
Compression ratio	10 to 1
Horsepower	22.5 at 8250 rpm
Carburetion	One Amal R-928
Transmission	4-speed
Clutch	Multidisc, wet plate
Primary drive	Duplex chain
Final drive	Single-row chain
Brakes	Drum
Tire size, front/rear	3.00 x 20/4.00 x 18
Lubrication	Dry sump
Fuel capacity	2.5 gallons
Dry weight	287 pounds
Wheelbase	54 inches
0 to 60 mph	8.9 seconds
Standing start, ¼-mile	17.4 seconds/75 mph
Top speed	86 mph



COMPLEAT GUIDE TO PISTONS

Well, maybe not *totally* compleat. But you'll get more than a little insight into their care and feeding

BY CARL CAIATI

EVERYONE WHO IS hip to bikes and internal combustion engines knows what the piston is and its relationship to the other working parts of the engine. However, few newcomers to the bike field realize the importance of pistons—how they relate to the performance of the engine, how many different pistons are available and how the application of certain modified pistons relate to increasing horsepower in the otherwise stock engine. People will generally rap about high lift cams and oversized valves. But a lot of guys shy away from the thought of oversized, modified or higher compression pistons.

All pistons are similar to each other in certain ways. Even the simple stock versions and the higher compression racing-type pistons are related.

A typical piston replacement kit. Included are, piston, rings wrist pin and pin retainers.

The physical makeup of the piston is as follows: It is a cylindrically shaped component, hollowed on the inside. The mid-to-lower portion of the cylinder is referred to as the piston skirt. Around the mid-portion of the piston is the opening for the wristpin which in assembly is inserted and secured on both ends with either a wristpin clip or Teflon pin retainers. Directly above the wristpin area are the ring lands—grooves machined into the piston encompassing the full circumference of the piston surface. These grooves serve to retain the piston rings.

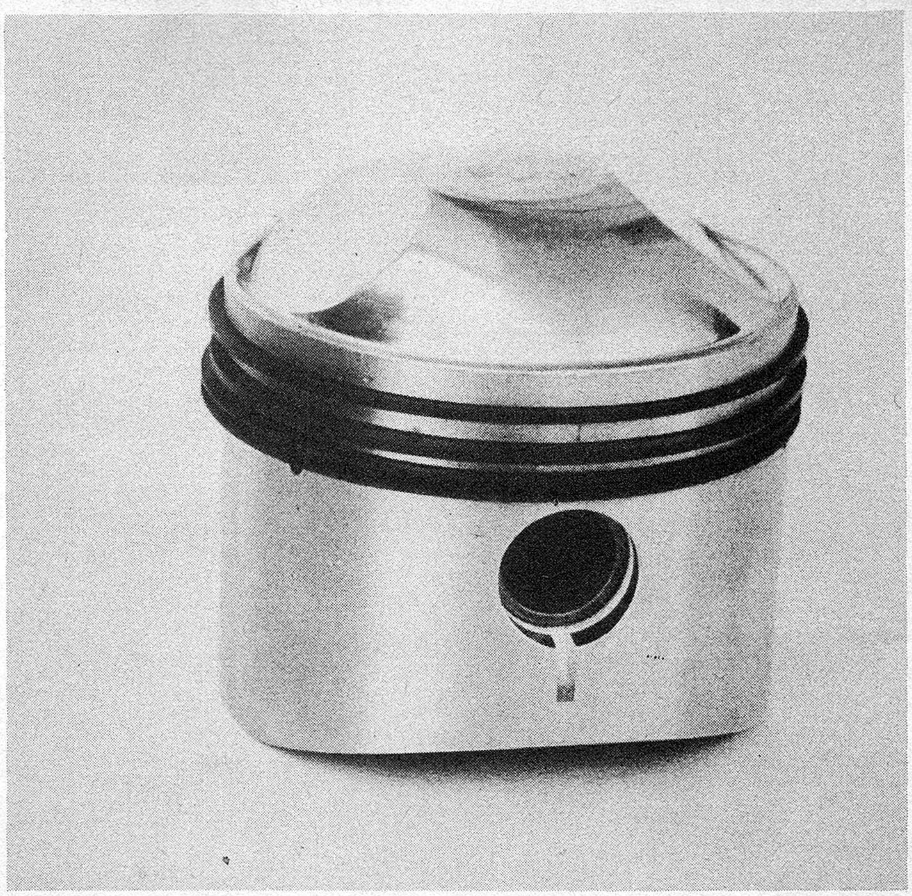
The piston rings are a critically important part of the piston, functioning somewhat like flexible gaskets. It is their function to bridge the gap between the piston and the wall of the cylinder fitting loose enough to allow unrestricted up and down travel of the piston, yet tight enough to inhibit excessive compression leak or blowby. Regardless of the configuration or the amount of rings used on a piston, the lower ring is usually an oil ring and can be easily differentiated from the other rings by the openings or grooves in it. The oil ring's respective groove on the piston also has perforations in it to enable oil to seep through for cylinder lubrication.

The top surface of the piston is referred to as the dome. The shape varies according to the proposed function of the piston or piston type. The dome surface may be flat or somewhat convex as in the case of a stock piston or radically apexed or high as in the case of high compression and racing pistons. The bigger the wedge on the top of the piston, the less area is left in the upper cylinder portion which further compresses the incoming gas mixture. Some stock machines do have compression wedges that are moderately raised and make for some peppy street riding. Some really high compression pistons have valve pockets or relief cuts machined into the dome since some high compression pistons come so close to the open valve that there is a possibility of contact, hence damage to piston, valve or both.

Pistons are manufactured using one of two procedures—casting or forging. Cast pistons are generally cheaper and easier to produce and are very common in stock machines, particularly the current Japanese models. They are finished by machine and the ring lands or grooves cut down on a lathe.

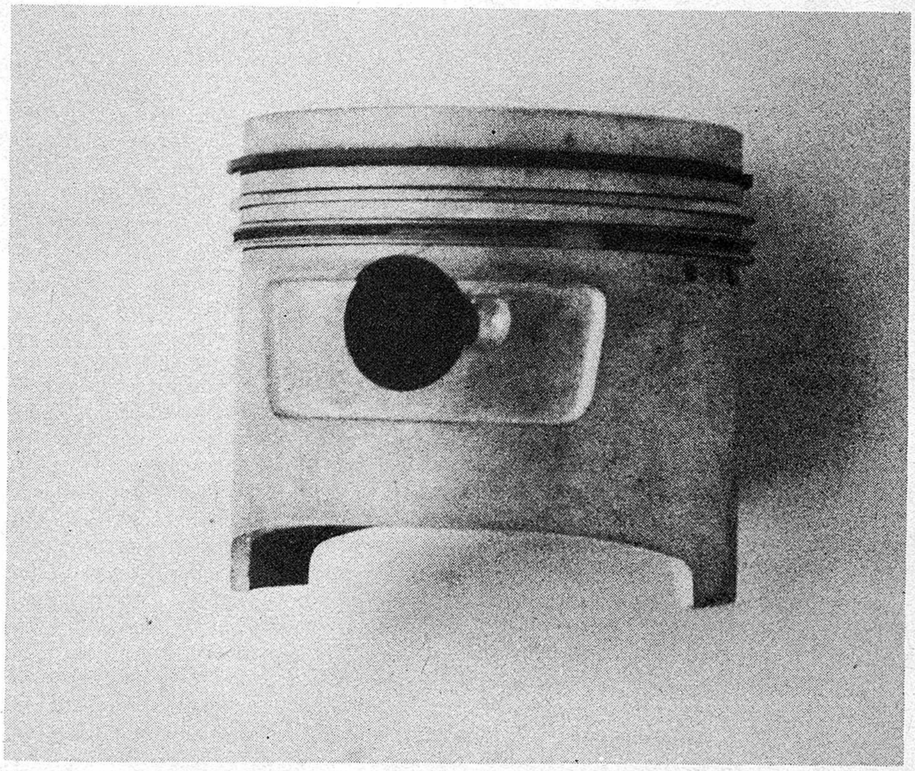
Forged pistons are created by taking alloy metal, inserting the metal blank in a high pressure hydraulic press which further compresses the metal into a flawless ultrahard piece. The intense pressure allows the grain in the alloy to align, consequently eliminating weaker spots. After "pressing," the forged piston blank is machined in much the same way as the cast job.

Regardless of whether they are cast or forged, all pistons are accurately machined to afford minimum skirt clearance when fitted into their appropriate cylinder bores.

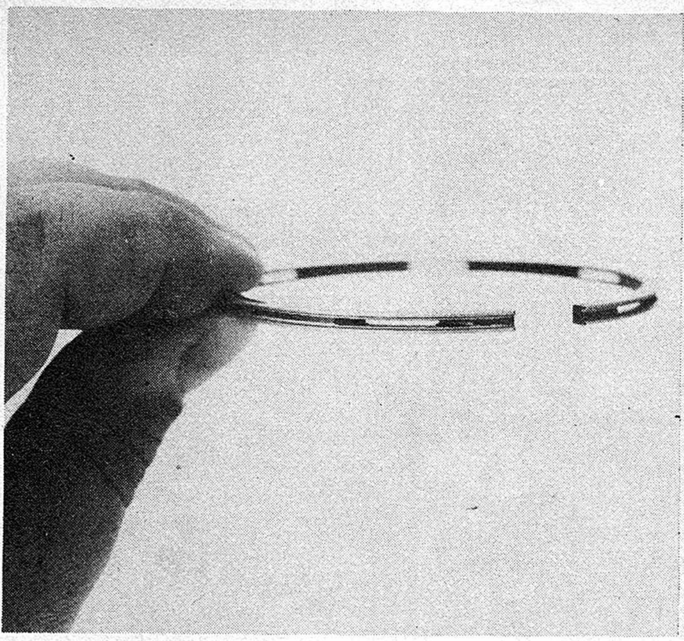


A high compression piston is characterized by its higher dome or wedge. This is a 650 BSA piston.

When servicing or changing pistons and rings, there is one prime prerequisite—adhering to the recommended tolerances of the component parts. Before replacing a piston, check the rings and grooves. When installing new or hop-up pistons, this is not as vital. But make sure you are using a proper or recommended replacement. It is always advisable to check the cylinder walls for such imperfections as wear and scoring. Piston scoring can hinder good compression and can be caused by incorrect timing, rings not compressing properly, improper

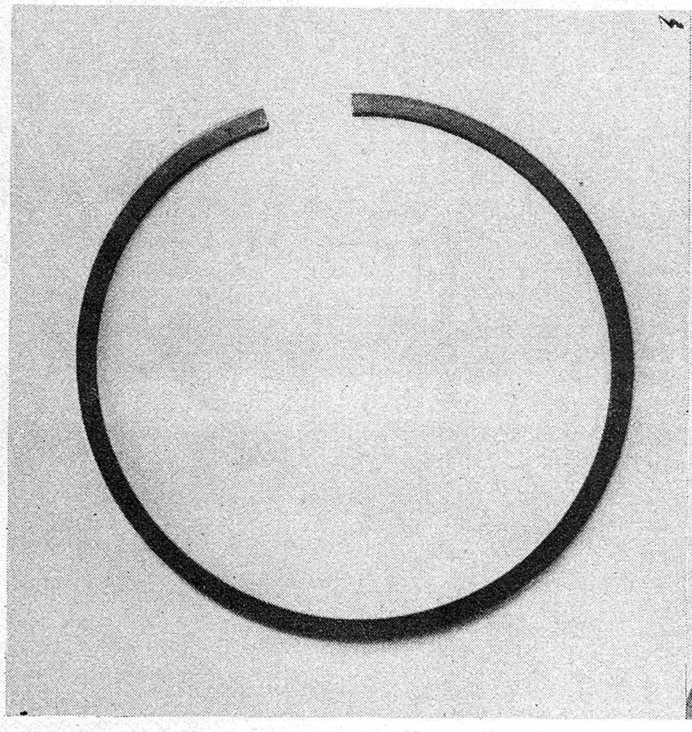


A stock 750 piston. Note the flat crown.

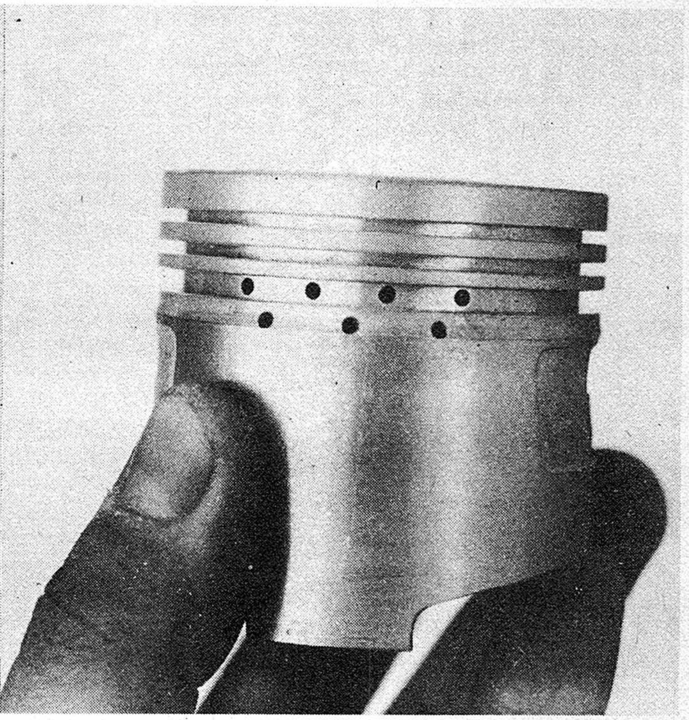


The oil ring is easily identified by its perforations.

Arrow or triangular symbol, top surface of piston assists in reinserting the piston properly.



The T engraved into the ring denotes top. Side should face up when placed onto piston.



The holes in the lower groove are for oil passage.

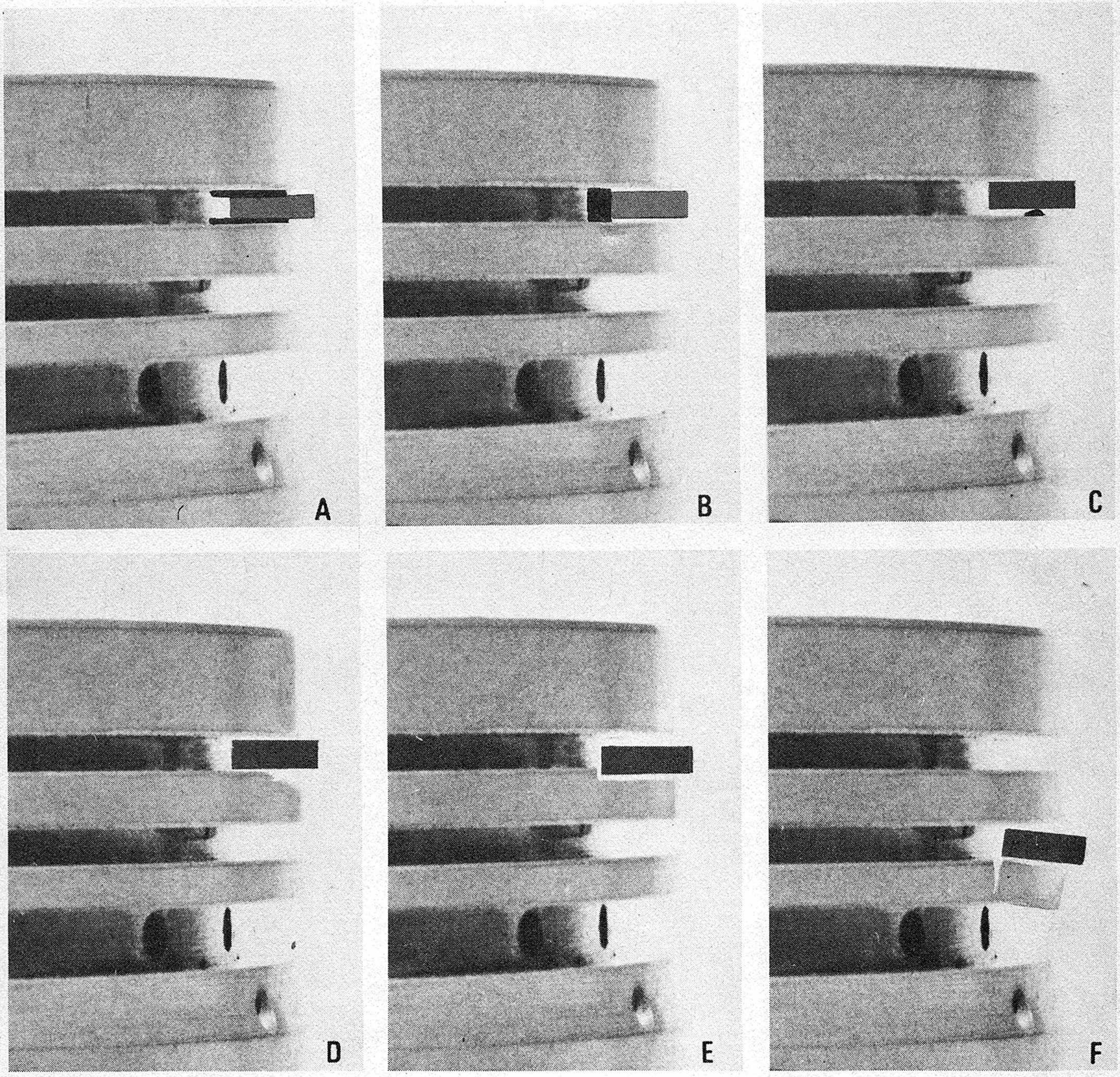
break-in and excessive overheating of the engine.

Before installing new piston rings, follow the manufacturer's instructions to the nth degree. Prior to placing the rings onto the piston, insert them into the open top end of the cylinder. Then, using the piston, slide the ring a little way into the cylinder to place the ring squarely in the bore. Measure the ring gap between the ends of the ring using a feeler gauge. Duplicate the procedure at the lower end of the cylinder. Gap tolerance is critical and should be right on the head. If the gap is too tight, rings may break during operation. If the gap is excessive, you will not affect a proper seal. If you are using the proper ring, variation in the gap can also be a clue or indication of cylinder wear.

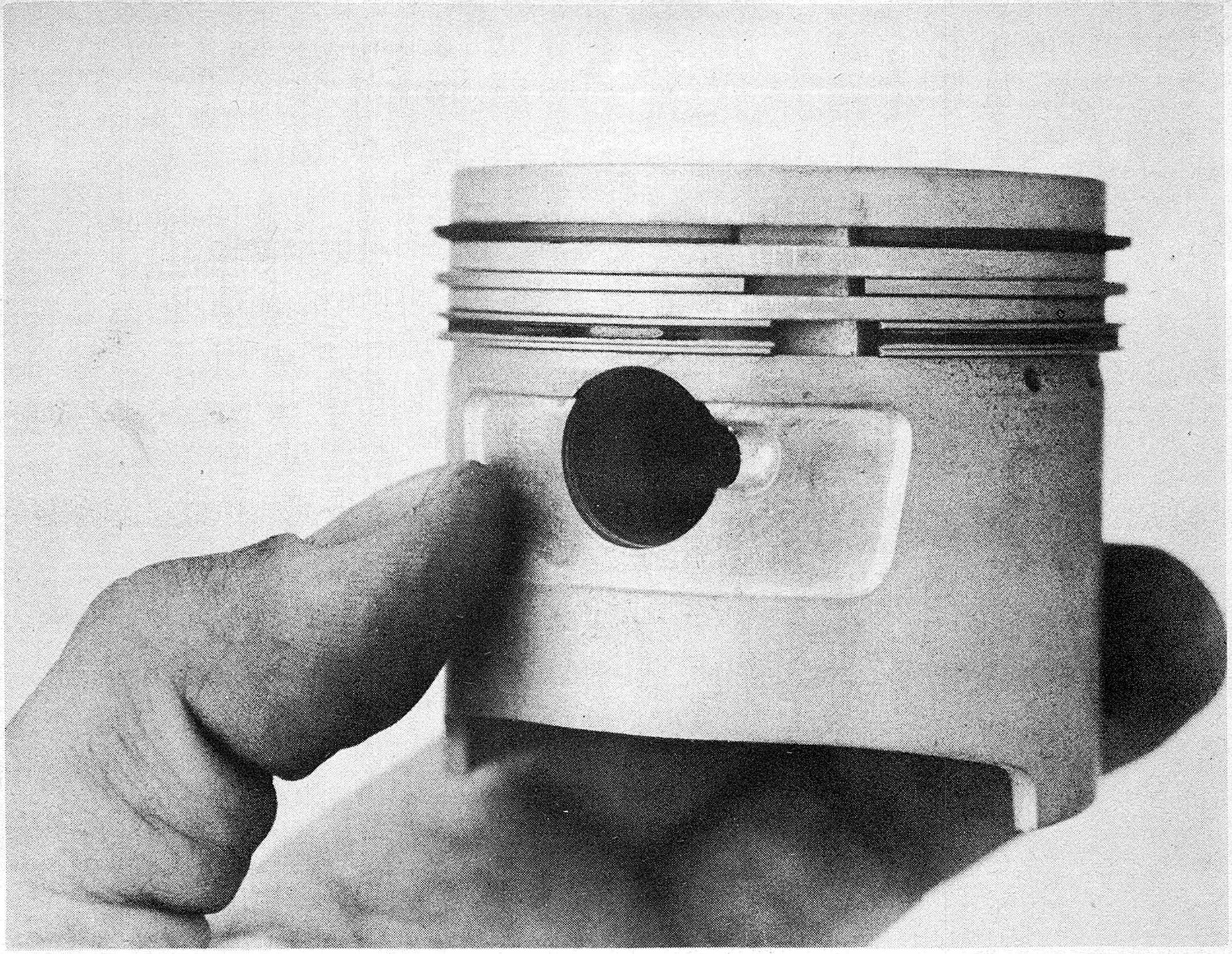
In cases where the cylinder bore is exceedingly worn and standard sized pistons and rings can no longer be utilized, it would be advisable to move to the next oversize piston and ring kit which most manufacturers have expressly for this purpose. It is wise to have the cylinder bore rehoned to remove cylinder wall glaze prior to installing new pistons and rings. If ridges at the top and bottom ends of ring travel are present, also remove them by honing. If these ridges are not eliminated they may act adversely on new piston rings causing them to catch, possibly damaging or bending the ring lands. Side clearance between rings and ring grooves should also be checked with a feeler gauge following recommended tolerances. After honing the cylinder walls, clean the cylinders thoroughly to remove abrasive residue. Then swab the cylinder bore with a light oil.

If using oversized pistons for more horsepower is your goal, the cylinder may be bored out using either a boring bar or a hone. It is strongly recommended that a shop specializing in this sort of work undertake the job, since accurate boring is an intricate procedure sometimes necessitating specialized equipment. If proper procedure is used and extreme care utilized, installation of oversized, higher compression pistons and rings should result in highly increased performance.

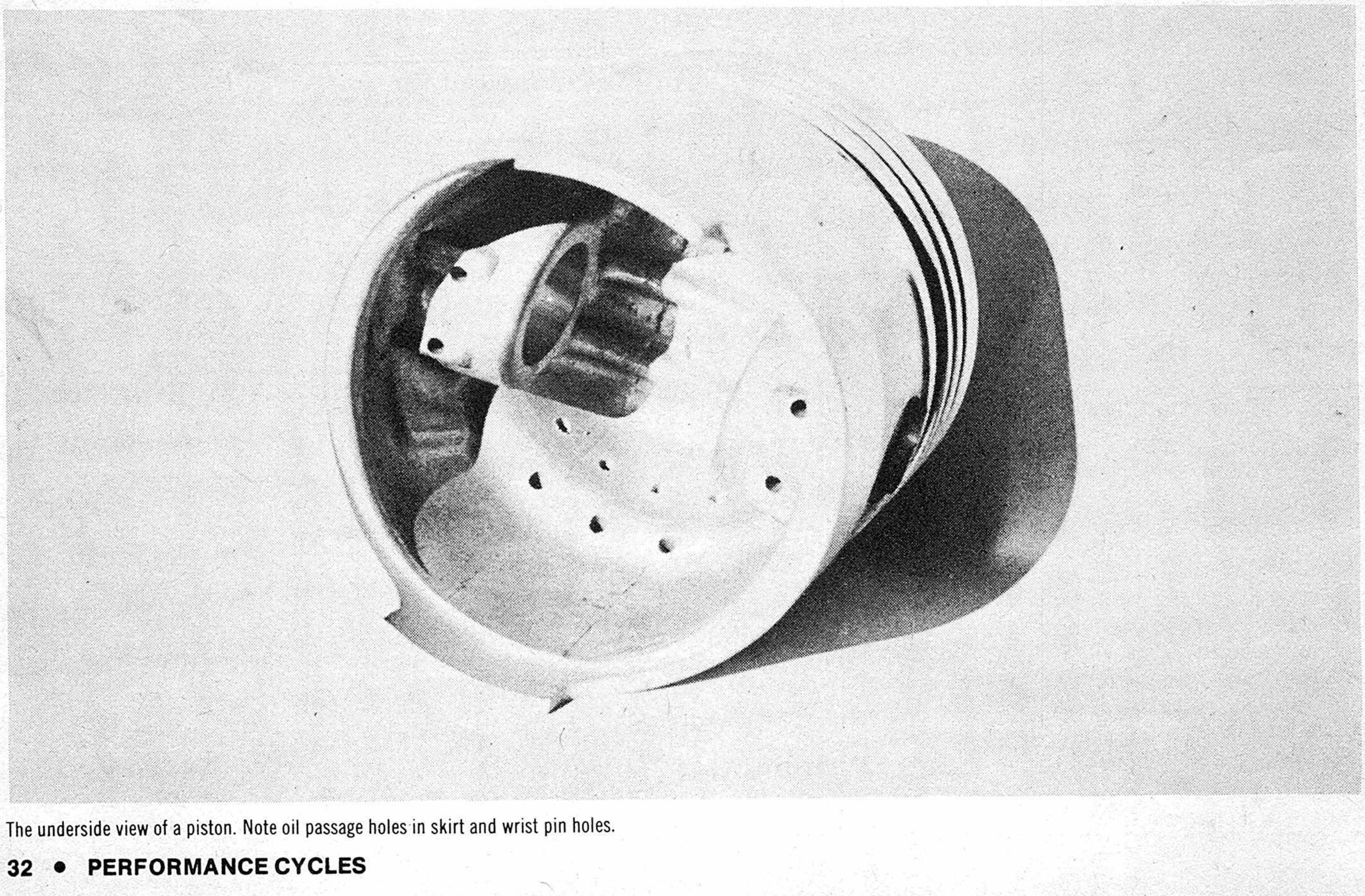
TROUBLESHOOTING PISTONS



A. Carbon buildup on ring sides. Causes sticking of rings.
B. Carbon buildup between ring and piston. Inhibits proper compression of rings.
C. Pieces of carbon wedged between rings and ring lands.
D. Nicks or chips out of ring lands.
E. Irregular wear on ring lands.
F. Bent or broken ring land.



Ring ends should never be placed over one another or faulty compression will occur. Intervals of 120 degrees are recommended.



The underside view of a piston. Note oil passage holes in skirt and wrist pin holes.

With a little time and effort, you can transform the Sierra into a hot off-road racer.

185 SUZUKI POWER PROGRAM

The dual-purpose 185 Suzuki Sierra can be a race winning motocross machine with a minimum of modifications

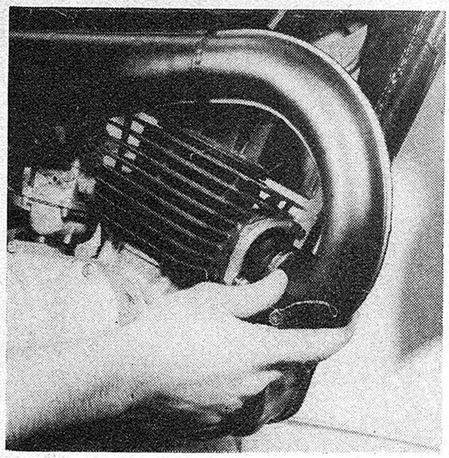
BY ROBERT SCHLEICHER

THE SIERRA MAY BE the most popular model Suzuki has yet produced if the early rush at dealer's salesrooms is any indication. The machine itself is darn near perfect for the beginning rider with just the right balance of weight and power to make it easy to handle and yet responsive to an uneducated throttle hand.

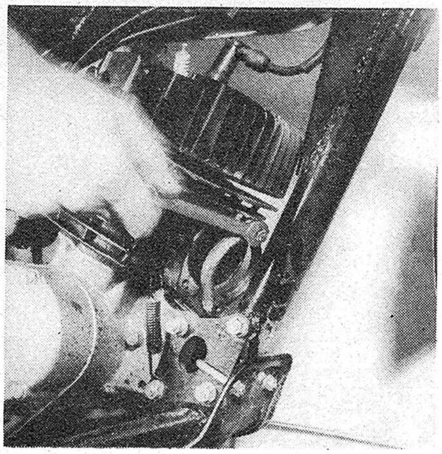
The 185cc Sierra is another of those dual-purpose trailbikes that have been pouring off the ships and onto our American docks during the last few years as the Japanese response to American dealer demands.

There is something a bit different about the Sierra, though, that the experienced riders are just beginning to notice. This is one of the first machines in the 175-185cc displacement class that was designed from the ground up to be just what it is. It's *not* a scaled down 250 or an overbored 125. And it shows. Suzuki has managed to duplicate the lightweight handling and response to the bars that is characteristic of the popular 100 and 125cc machines with about half again as much power as the smaller displacement machines. If it runs well as it comes out of the crate, what will it do when converted to a real off-road racer?

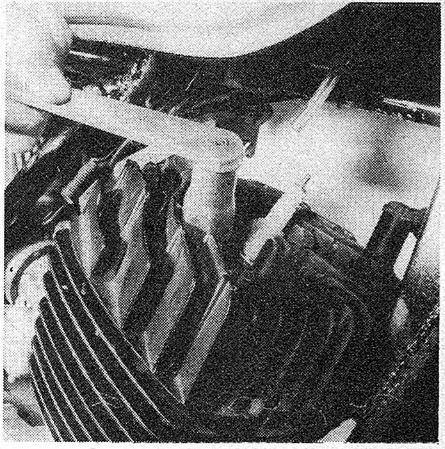
Suzuki offers hop-up kits for most of their dual-purpose trailbikes but, so far, the Sierra has been ignored. Jim Coleman and his crew at Aggie Suzuki, 19040 Hawthorne, Torrance, California 90503 decided to do something about it. A surprisingly few changes transformed the subtle Sierra into an off-road racer that seems to have nearly as much usable power per pound as a 250 with really superb handling in the rough stuff. The only major changes are a 21-inch front wheel and tire, a larger rear tire, a quick cleanup of the cylinder barrel and ports and removal of the lighting equipment. Any on-the-ball dealer can do the work for you, you can do it yourself or you can contact Aggie Suzuki for prices on the parts and labor you just can't obtain locally. The nice part of this conversion is that you com-



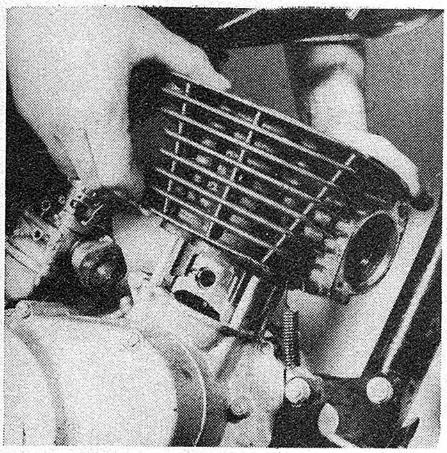
1. Pry off the expansion chamber, unbolt the rear mount and lift the entire exhause system away from the engine.



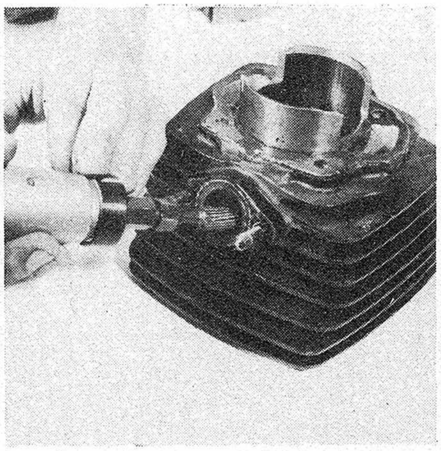
2. Unbolt the two caps screws that retain the exhaust pipe's mounting and sealing flange while the cylinder barrel is in place.



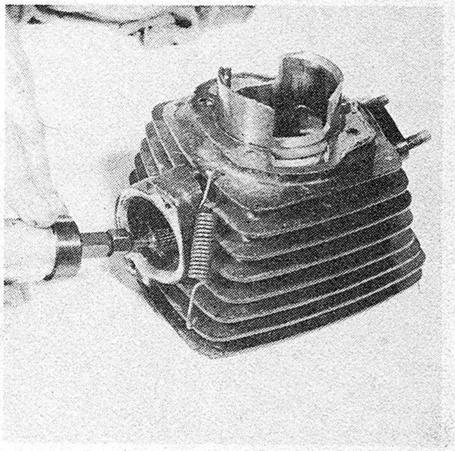
3. The Suzuki Sierra has mounting holes for two spark plugs. Remove both of them from the cylinder head.



7. The cylinder barrel can now be lifted away from crankcase and piston. Pry out retaining clips and remove piston pin and piston.



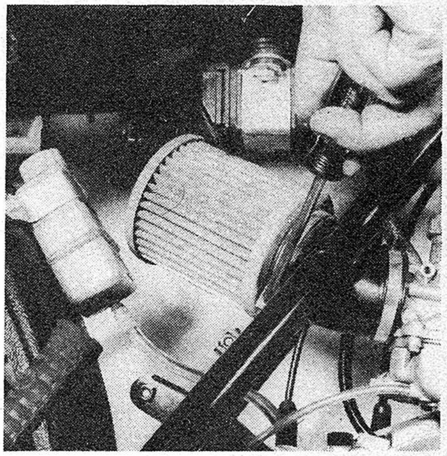
8. A high speed grinder (electric or air-powered) with a rotary file bit is used to smooth ports. Leave cylinder side alone.



9. The intake port, too, should be smoothed. But the shape of its opening on cylinder bore side must be left as delivered.

13. Smooth the edges of the grinding cuts made on the piston skirt with fine emery cloth and wash away the grinding dust with gasoline.

14. Remove the chrome heat shield grid from the expansion chamber and move the rear mounting tab inward to tuck in chamber.

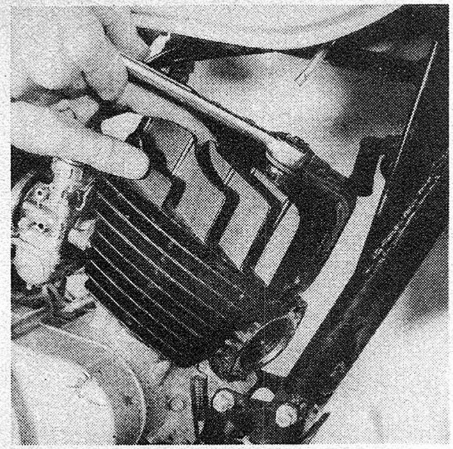


15. A K&N air filter and mount are available to replace the stock Suzuki Sierra air cleaner. K&N unit clamps in.

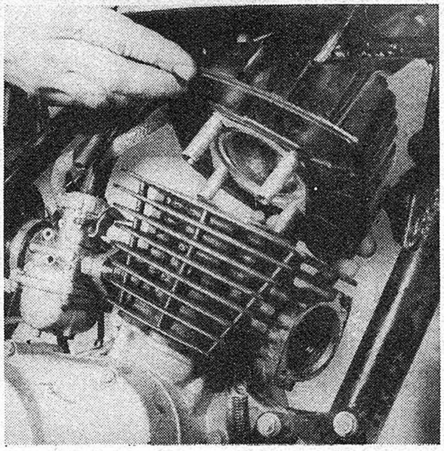
plete just one step at a time—as your time and budget allow—and still enjoy the machine and the changes your efforts have produced. Now let's get into it.

An Akront 21-inch diameter alloy front rim was laced to the hub and brake assembly from a TS90 Suzuki. The larger rim allows the use of a greater diameter tire than the stock 3.25x19 (a 3.00x21 seems best) and the TS90 front brake is larger and easier to control than the tiny stopper on the Sierra. The larger front tire rides over bumps and rocks that would hang up the stock 19-incher and the front of the machine is raised enough to give the front forks a bit more effective rake angle for more stability. A 4.00x18 trials pattern tire replaces the stock 3.50x18 rear tire for the maximum possible width. The fairly mild knobs on the trials tire allow the thing to spin, if necessary, rather than digging in and stalling the engine like a full knobby would.

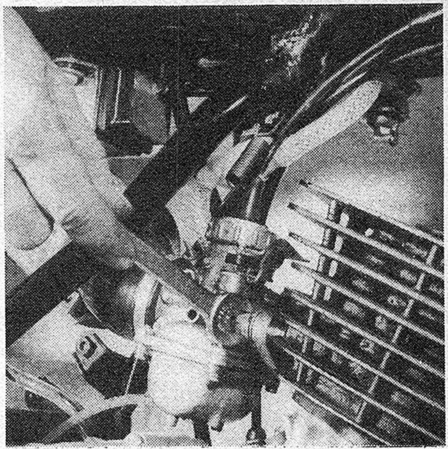
The engine produces plenty of power in



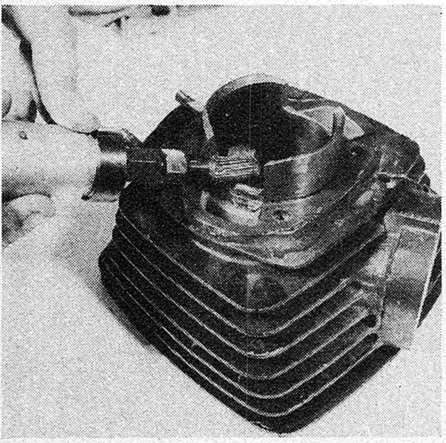
4. Loosen and remove all cylinder head retaining nuts. Cylinder heads and barrels are painted flat black for cool running.



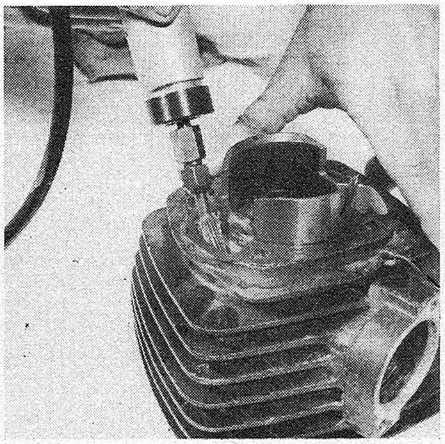
5. Gently lift the cylinder head away from the top of the cylinder barrel. Be sure to keep track of the four aligning dowels and studs.



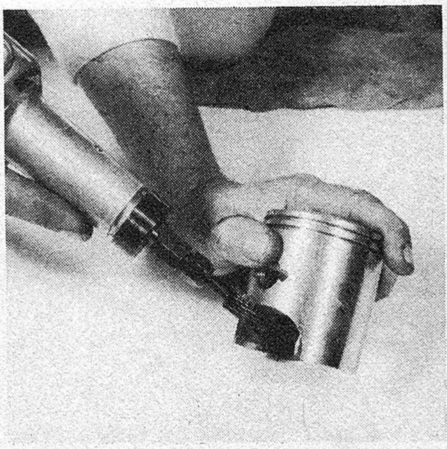
6. Remove the two bolts that hold the carb to the cylinder barrel and loosen the clamp screw on the air cleaner hose to free carb.



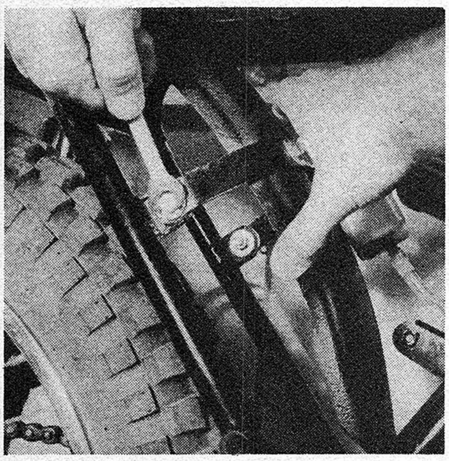
10. The edges of the cutout for transfer ports can be beveled to help smooth the flow of gasses from crankcase to port.



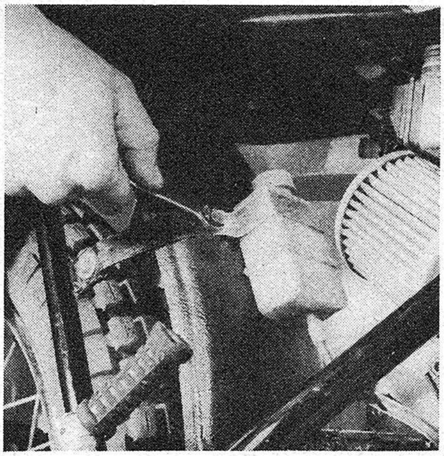
11. Remove any rough edges from inside the two transfer ports. Finish off all ports with a smooth grinding stone or emery cloth.



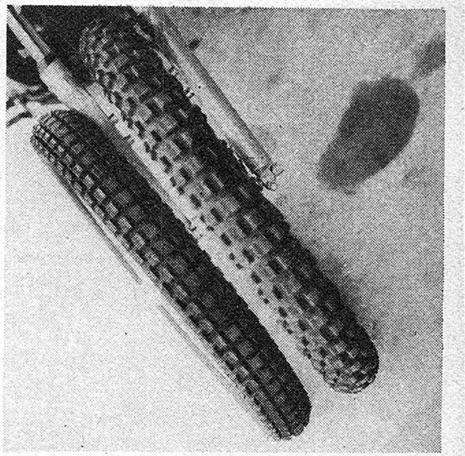
12. Mark the shape of the cutout in the base of the cylinder barrel on the skirt of the piston so you can match piston to barrel.



16. Half of a Webco/Preston Petty rear fender is used to replace stock metal unit. A strip of steel is drilled to serve as mount.



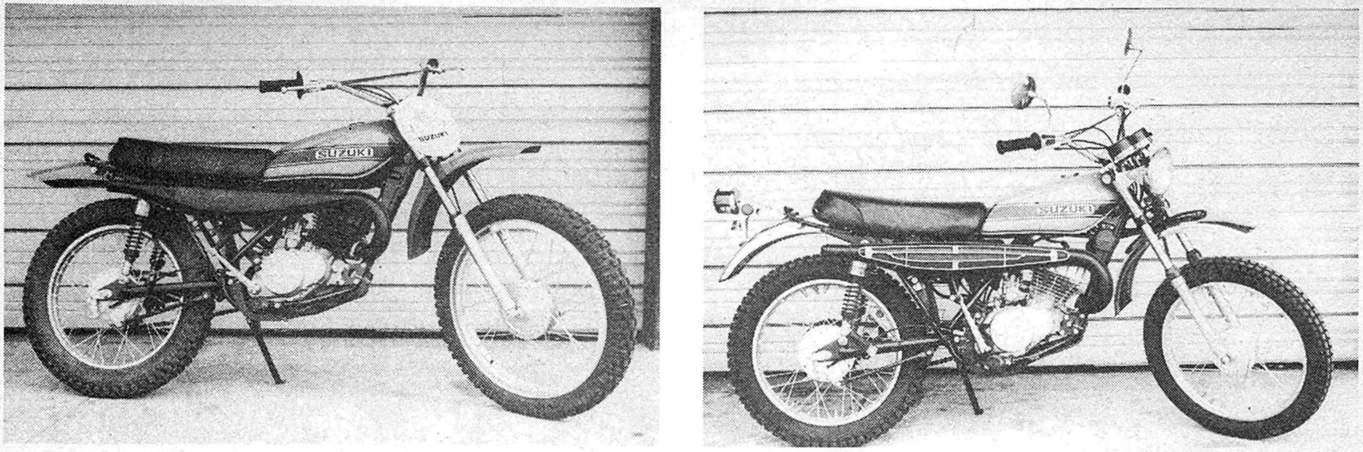
17. Tiny plastic oil bottle from Suzuki 90 racing parts kits has ample capacity for off-road races. Bracket is bolted directly to the fender.



18. A 3.00 x 21 front tire and Akront alloy rim are laced to a Suzuki 90 front brake to replace 3.25 x 19 front tire, rim and brake.

its stock condition but you can be sure it's cranking out that full 17.5 rated horsepower by matching the transfer ports in the barrel to the openings in the crankcase. Smoothing the joints between the intake and exhaust ports and their manifolds helps as does carefully aligning the cutout in the bottom sides of the piston with the similar cutout in the circular spigot end of the bottom of the cylinder barrel.

A K&N air cleaner replaces the stock can. If the machine is to be used strictly for racing the spark arrestor can be pounded out of the muffler. Leave the muffler core in place, though. The engine will produce more power with it than without it. The new air filter, modified muffler and super clean ports will probably alter the engine's breathing characteristics enough to necessitate a change in both carburetor jets and spark plug. Try a B8HS NKG spark plug in place of the stock B77HC. Then go to successively larger main jets until the engine will run without a burble at high speeds. The guys at



The modified-for racing version of the left and the stock Sierra on the right. The racer is fitted with fenders from TM400 Cyclone motocrosser, 21-inch front tire and wheel. Naturally, the lights and other extraneous matter have been removed for racing.

Aggie Suzuki found that they had to go up three sizes in the main jet. But your altitude and riding conditions could demand vastly different jetting.

The balance of the modifications on the machine in the photos are more on the order of convenience than necessity. But they do help. The lighting coils were removed along with the lights to eliminate a potential cause of trouble and to reduce some of the flywheel effect so the engine would be more willing to rev. The CCI automatic lubrication system can be removed to save possible problems or, better, you can replace the bulky stock oil tank with the tiny plastic racing oil bottle from the TS90's hop-up kit.

The shield over the expansion chamber was removed and the top mounting tab relocated further inward to reduce the width

(continued on page 74)

Modified Suzuki Sierra looks tough and handles great.

ROAD TEST

100 Kawasaki Bushmaster

One hell of a little fun machine

The Bushmaster pulls off wheelies at the flick of a wrist.

Photos by Joe Oldham

THERE IS ONLY ONE reason for Kawasaki's 100T Bushmaster to exist. It's fun. More damn fun than you'll have in a hundred years with other bigger more powerful bikes.

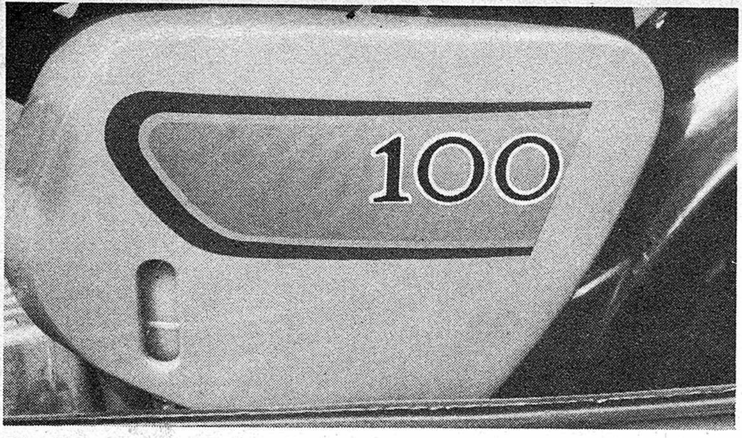
The Bushmaster is a ball on the street and on the dirt. It's one of the few dual-purpose bikes we've tested recently that can actually perform well both on and off road.

One of the reasons that the 100T is so much fun is its scorching performance—for a 100 anyway. Kawasaki claims a top speed of 60 mph for the 100T. But at Raceway Park in Englishtown, N.J., we "blasted" through the traps at a true 69 mph which is really pushing for a bike with 99cc.

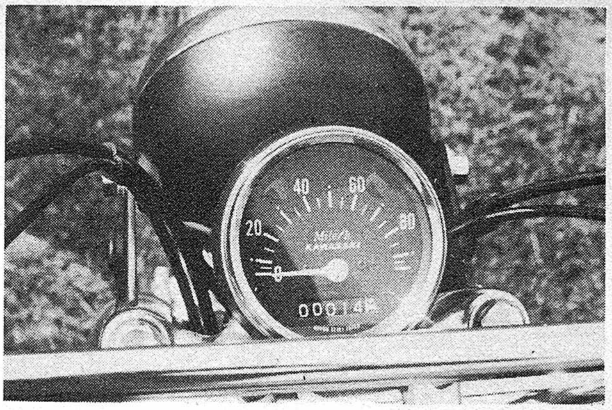
The rotary disc valve engine is, like all other Kawasakis, a 2-stroke. It also uses the great Kawasaki Superlube automatic oil injection system so there is no oil and gas mixing. A bore and stroke of 50 x 52mm gives a true displacement of 99cc. And out of that 99cc, Kawasaki has managed to squeeze out 11.5 horsepower at 8000 rpm. Torque is rated 7.95 lbs./ft. at 7000 rpm. With a 7 to 1 compression ratio and packing only 182 pounds dry, the Bushmaster has a good power-to-weight ratio and can easily rack up anything in its class. In that, the 100T follows the basic Kawasaki design principle which requires more performance per cc than any other make of bike. We've found that principle to be true for maybe 99% of the Kawasakis we've tested over the past four years.

With over 11 horses coming in at 8000 rpm and with the torque peak way up at seven grand, the little Bushmaster is a pipey engine. There's no doubt about that. There's not much low end torque when you crack open the throttle at low speeds. You start to move but nothing spectacular. Then, blam! The engine comes on the cam and the little 99cc engine starts getting it on. If you're sitting back on the seat, hold on because the front wheel will be coming up any second now.

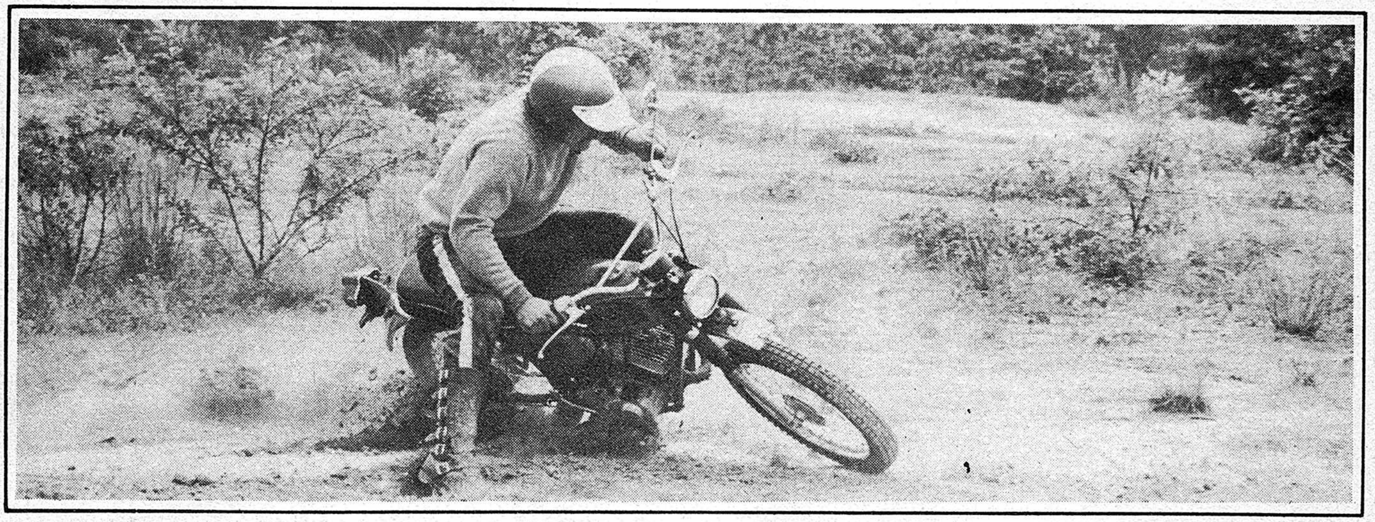
Full bore power shifts are enough to pull the front wheel too. Which is



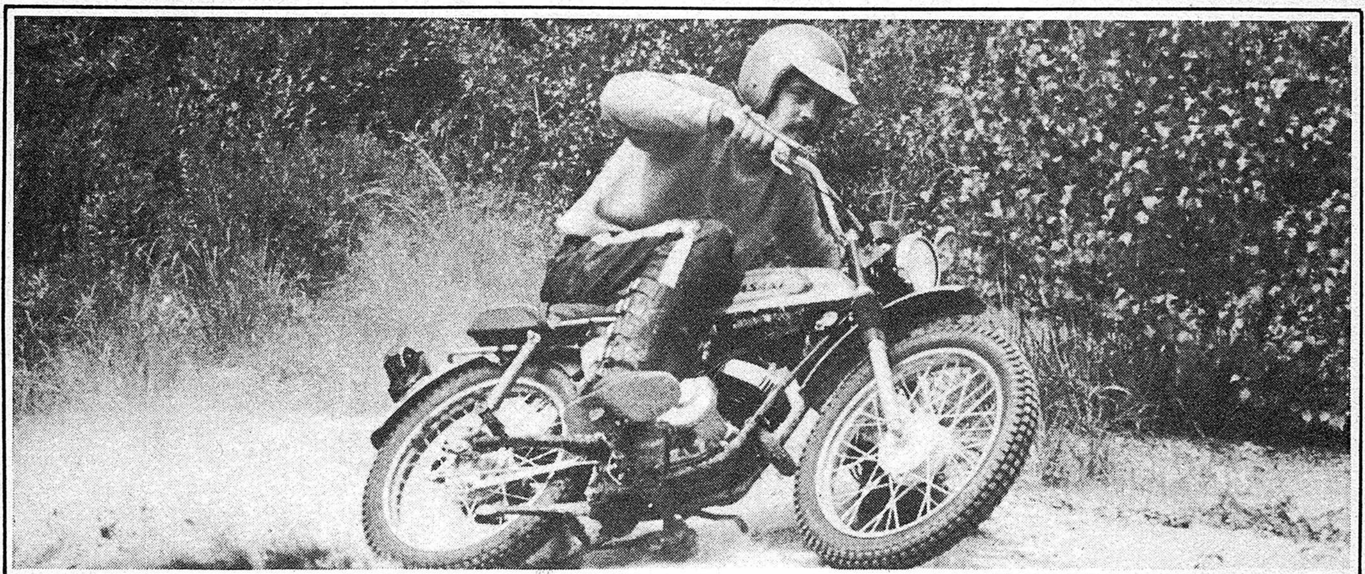
There's no gas/oil mixing thanks to the wonders of Superlube.



The Kawa brochure says 60 but the bike went 69 mph in our test.



With its short wheelbase and light weight the bike is extremely easy to handle.

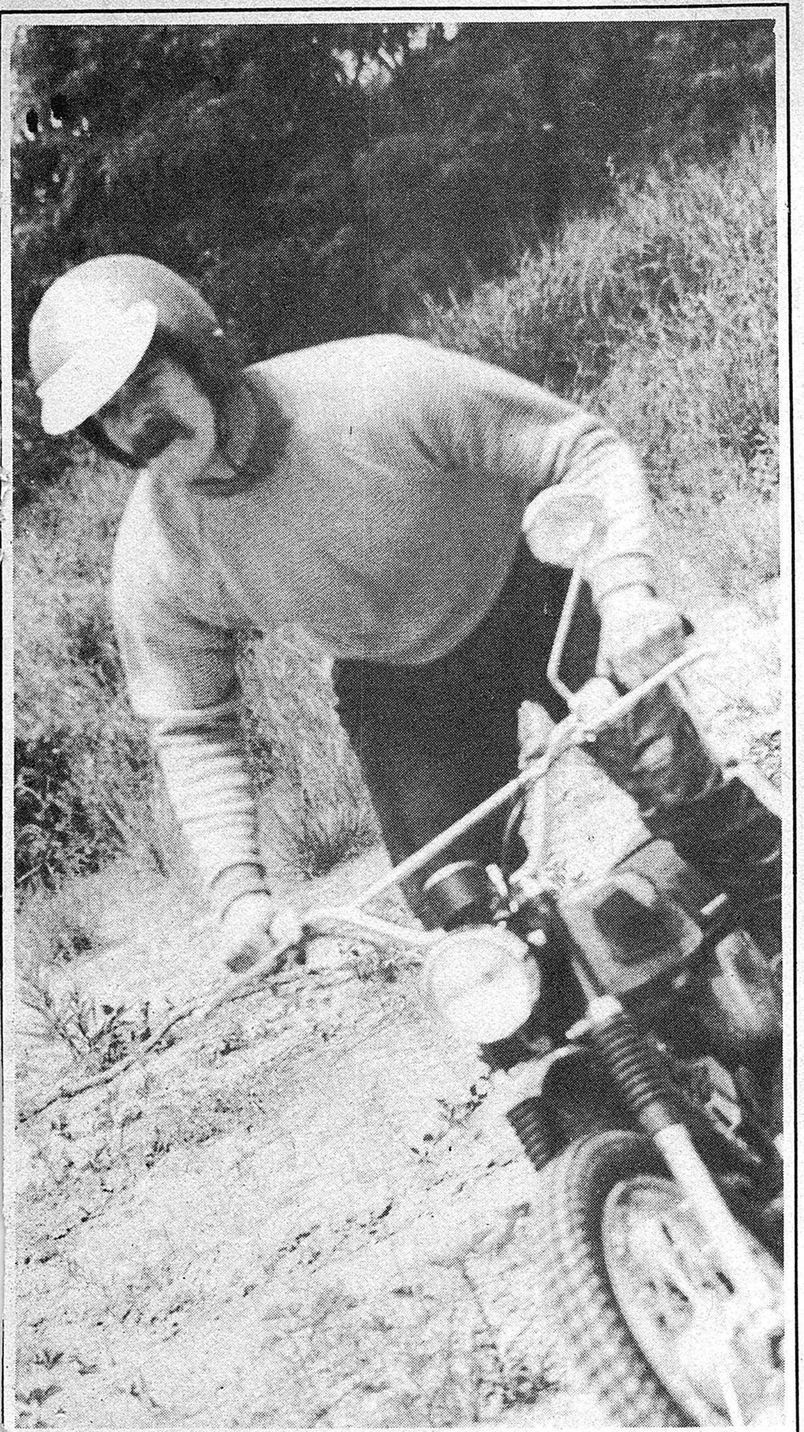


Semi-knobby tires left much to be desired for serious off-road riding.

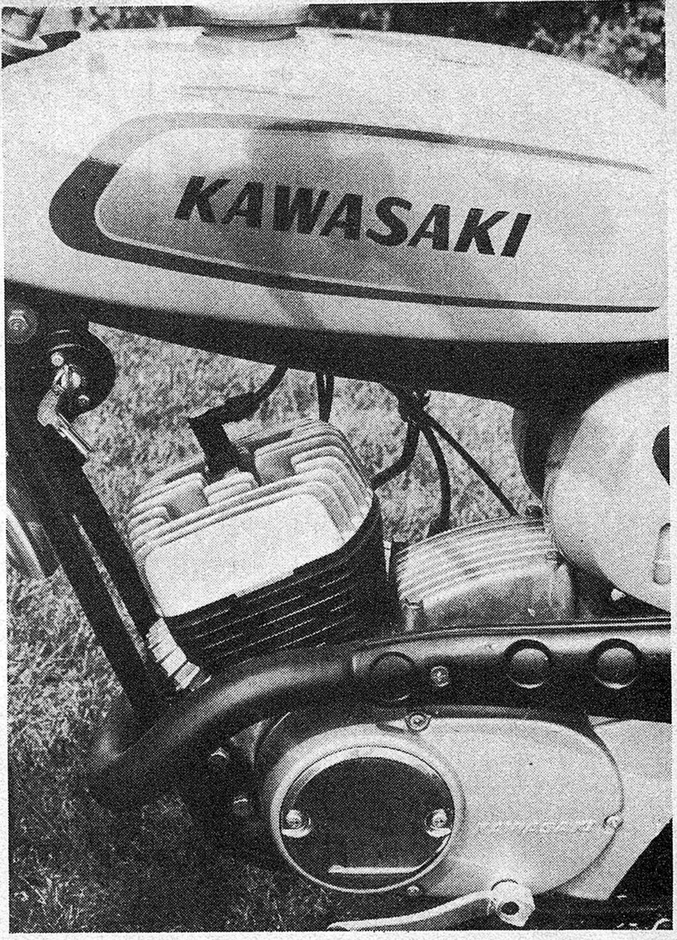
great fun on the street where people look aghast at you as you blast by on a tiny motorcycle with the front wheel up. Like we said, the Bushmaster is unbelievable fun.

OK, so it goes. But what else does it do? It does everything you'll ever ask it to do and then some. It shifts like a big bike. Indeed, the gearbox feels the same as the box on Kawasaki's Mach III. The pattern is the same with neutral all the way down and five wide ratios coming up on the shift pattern. We never missed a shift during the test period which lasted over eight weeks. We used the box hard, shifting both with and without the clutch on the road and off the road and it performed beautifully. There's just something about Kawasaki gearboxes that we like.

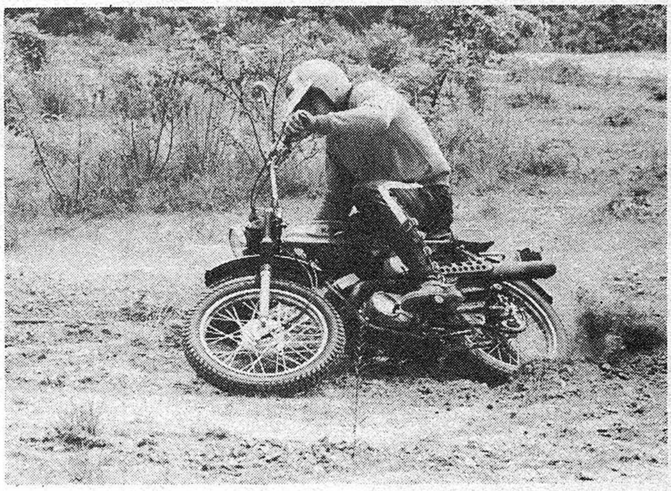
It starts. Easily. And the engine doesn't care whether it's hot or cold. When it's cold, just close the handlebar-mounted choke lever and kick it once. It'll start. A short warmup and you can open the choke and you're



If you weigh over 135 even small bumps may bottom out suspension.



The mini engine puts out a mighty 11.5 horsepower.



Even with compromise tires bike can be thrown around.

off. When warm, just a light kick does it every time.

It handles. With only a 45.5-inch wheelbase, you might expect it to be extremely responsive and highly maneuverable. You'd be right on both counts. The Bushmaster is just about neutral in all handling situations and simply goes where you command it to go, be it threading through traffic with abandon or powering through a series of tight dirt corners with aplomb.

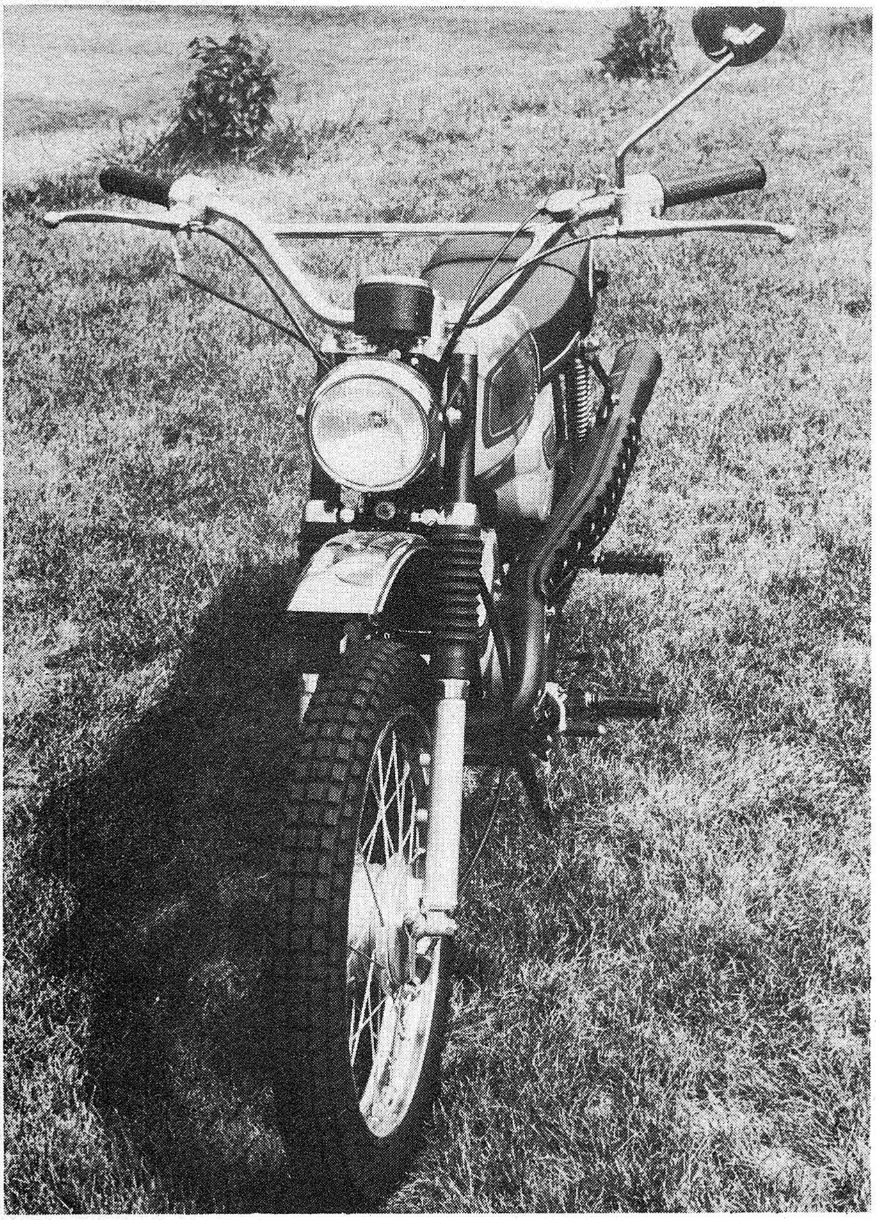
However, there are two things with the handling we didn't like. First, the front forks are a mite too soft and the rear shocks are way *way* too soft. If you weight over 135, you'll be bottoming out the suspension on even little bumps. The front forks can be stiffened up with heavier fork oil. We're afraid the rear shocks are beyond help. If you're a serious rider, you'll simply have to replace them.

Funny, but even with the suspension bottoming, we still have to rate the handling of the Bushmaster as good to excellent. It just shows that Kawasaki's engineers have done their frame geometry homework.

The other thing we didn't like was the tires. The 100T comes through with 2.75 x 18 Trials Universals on both front and rear. Like other dual-purpose bikes, the Bushmaster must use compromise tires so that the bike can be ridden both on the street and off-road. The Trials Universals do an adequate job in both instances but aren't really the answer for ultimate performance in either element. If you're going to do a lot of dirt riding with this bike, go to a full knobby.

Even with the stock semi-knob-

In soft sand the bike just doesn't make it.



High pipe has a U.S. Forestry approved spark arrestor for safe jaunts through the woods.

bies, the bike can still be thrown around at will. But the stock tires should be much larger. Maybe 3.50 x 18s at both ends would be the answer. As it is, the Bushmaster just doesn't make it off the road when the ground is soft—and don't even try it in soft sand. You won't get very far. There's just no traction available. However, for trail riding or casual dirt riding on packed earth, you'll make out OK.

One sore point on our test bike was the brakes. Stopping power was poor, so poor that we just didn't have much confidence when cruising on a highway at speeds over 30 mph. We realize that the Bushmaster is a small bike and small bikes usually have small brakes. But Kawasaki has gone too far with the smallness of the brakes on the Bushmaster.

Kawasaki claims a stopping distance of 21 feet for the Bushmaster at 22 mph. It took our test bike 38 feet to stop from 22 mph. Come on, Kawasaki, tighten up on your braking quality control. With such an outstanding bike in most other respects, don't spoil it with the brakes.

The paint and finish on the 100T was excellent. Fact is, we haven't seen a lously looking Kawasaki in a few years. They all seem to be put together well and detailed out to the nth degree. The high pipe on the

Set of 3.50x18s would be perfect off-road choice.

Rear shocks must be replaced for off-road use.

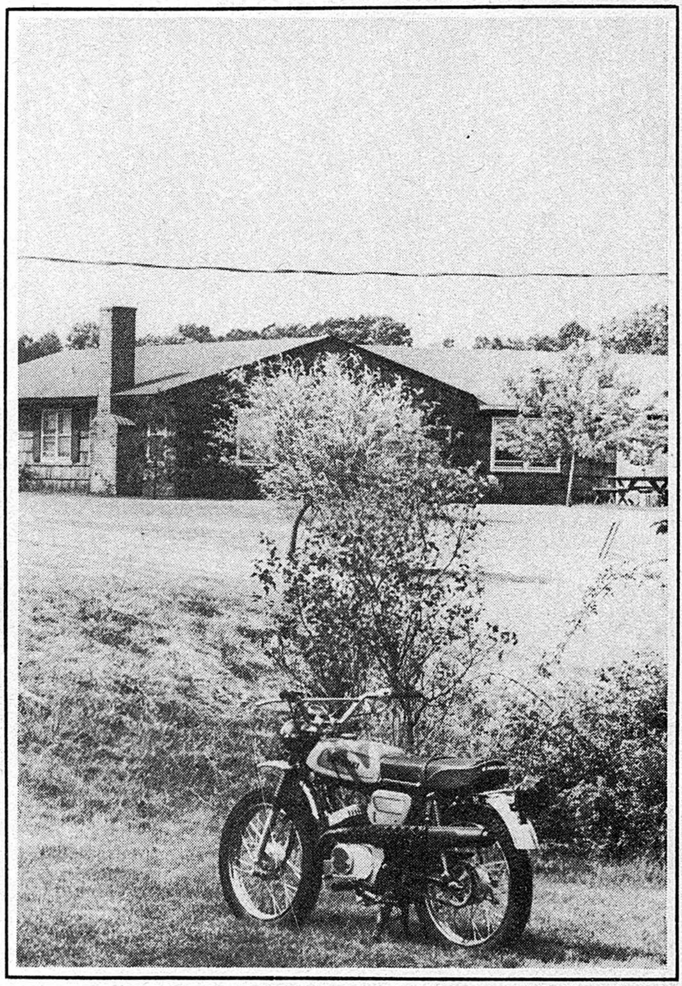
Bushmaster is ugly but does the job and has a U.S. Forestry approved spark arrestor so that the bike can be ridden in any national forest, national park or preserve. A good feature.

Like all 'Sakis, the 100T features the company's famous 12 month or 12,000 mile warranty. That alone makes it a fine beginning bike. If anything breaks on a beginner's bike, chances are he'll bring it back to his dealer. It's nice to know it will be fixed free.

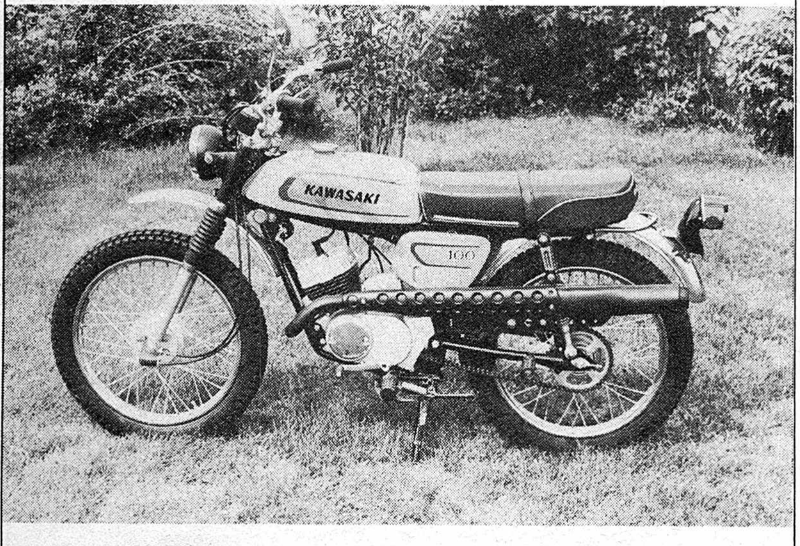
We'll let the Kawasaki sales brochure close out this dissertation:

"The new 100T Bushmaster is engineered to take it as well as dish it out. Perfect power for the novice with enough performance to satisfy a pro." Right on.

With few exceptions all the road testers loved the Bushmaster.



The quiet country setting belies Bushmaster's perf.



100 KAWASAKI BUSHMASTER

Base price	$385
Engine type	2-stroke single
Bore and stroke	50 x 52mm
Displacement	99cc
Compression ratio	7 to 1
Horsepower	11.5 at 8000 rpm
Carburetion	One 24mm Mikuni
Transmission	5-speed
Clutch	Multidisc, wet plate
Primary drive	Helical gear
Final drive	Single-row chain
Brakes	Drum
Tire size, front/rear	2.75 x 18/2.75 x 18
Lubrication	Oil injection
Fuel capacity	2.3 gallons
Dry weight	182 pounds
Wheelbase	45.5 inches
0 to 60 mph	NA
Standing start, ¼-mile	NA
Top speed	69 mph

A PROPOSAL

How about taking the big bucks out of road racing? How about a class of road racing for the little guy who digs it not for the money but for the fun. How about

FORMULA K

BY TOM BAILEY

WHEN AUTOMOBILE ROAD racing first appeared in this country, it was not an expensive and elite sport. In fact, most competitors raced the machines they drove on the street. By simply taping over the head and taillights, putting numbers on the side of the car and buying a crash helmet, the car which was used for transportation to and from work during the week became a weekend racer.

As the popularity of the sport grew, so did the expense. And by the early '60s it was almost impossible for the non-rich to road race cars. But the governing body of road racing, the Sports Car Club of America, took action to correct this situation.

First, they inaugurated a class called Formula Junior. This formula worked well at first. But racers soon found out that there were not enough restrictions on the class. And as the machines were developed and new designs constructed, the cars became faster and more expensive until Formula Junior also became a class only for the very rich.

The governing body was determined to keep automobile road racing open to people besides the super rich, though. And in the mid-'60s they reached the almost ideal solution. They called it Formula Vee. Formula Vees are open wheeled racing cars using stock Volkswagen engines, suspension and brakes. They aren't exactly cheap, but they are reliable, easy on tires and fun to drive. And they don't cost even half as much as the old Formula Juniors did.

Motorcycle road racing has gone through the same changes too. When the AMA initially instituted the regulations for Class C road racing—that's what they race at Daytona—they did so with the specific thought that factory teams should not dominate racing. The rules specifically stated that machines used for racing must be mass produced and that no integral part of the engine could be changed. For example, a pushrod engine could not be converted to an overhead cam engine, nor could modifications of similar magnitude be undertaken. The intention of the people who designed the regulations under which the National Championship would be run is clear—they wanted the average competitor to be able to obtain exactly the same equipment the factory teams were using or at least a reasonably effective substitute.

The intention of the rules has somehow gone astray. In practice, duplicating a factory machine would be impossible for the average rider. It could possibly be done but only with a lot of money.

There have also been recent attempts to establish an amateur type class. These have included, in scrambling, the 100 class, and in road racing, the production class. In my opinion, both have failed to some degree.

When it was initially conceived, the 100 class was a good idea. It offered a cheap and easy way to begin racing. And it offered an opportunity for someone on a low budget to race a whole season without mortgaging his soul. Recently it has become a class in which you must have the fastest bike to win. And a new fastest bike seems to be developed each month.

Production racing, too, has its shortcomings. With the exception of the higher displacement divisions where each bike has more than enough power, a bike is at the mercy of the track it is being raced on. For example, at Virginia International Raceway Ducatis always seem to win the 250 production class. The Ducati handles well and brakes well, which at VIR can overcome even the lightning speed of 250 Kawasakis and Suzukis. However, on a faster track the Ducati rider may find himself hopelessly stranded in the middle of the pack, watching less talented riders on faster bikes zinging right on by him. In short, in production racing everyone is not on an equal basis.

I feel that what is needed at this time is a class which would put everyone on an equal basis, be cheap and *fun*. A class which would be motorcycling's counterpart to Formula Vee. And with the suggestions of my friend and photographer, Bob Slaughter, and my own thoughts on the matter, I believe we have an answer.

Formula K would be based on the Kawasaki 90S. The bike handles reasonably well and is fairly peppy. It has a top speed of about 70 mph and is reliable. For further details, see the regulation sheet.

The advantages of having a class like this are numerous. First, the machines are cheap—around $350—and could be set up with clip-ons, fairing and rear set pegs for probably around $100 more. Secondly, the fact that exhaust systems would be left intact might permit the machines to be raced in any large paved area, such as the parking lot at your local shopping center, assuming of course that a promoting club can make the necessary arrangements.

The main disadvantage people will site is that since the machines are not earth shatteringly fast, they won't be fun to race. But this is not necessarily true. Speed is a relative thing. Attaining 60 miles an hour on a go cart track may turn out to be just as much fun as doing 100 on a real road course.

If the idea moves you, write in to the magazine and tell me what you think. Maybe Bob and I aren't the only ones who are really grooved by road racing but too poor to do anything about it.

PROPOSED FORMULA K REGULATIONS

Machine—Kawasaki 90S Bushmaster or earlier model Kawasaki 90cc trail or street bikes.

Engine Modifications—The engine may be blueprinted. Air cleaners may be removed. The carb jets and spark plugs may be changed. The rotary valve may not be touched and the ports may not be enlarged. Compression ratio must remain standard and no reciprocating weight may be removed from the engine, transmission or clutch. In short, the engine must remain as near to stock as possible in order to keep expenses from elevating and also to promote reliability.

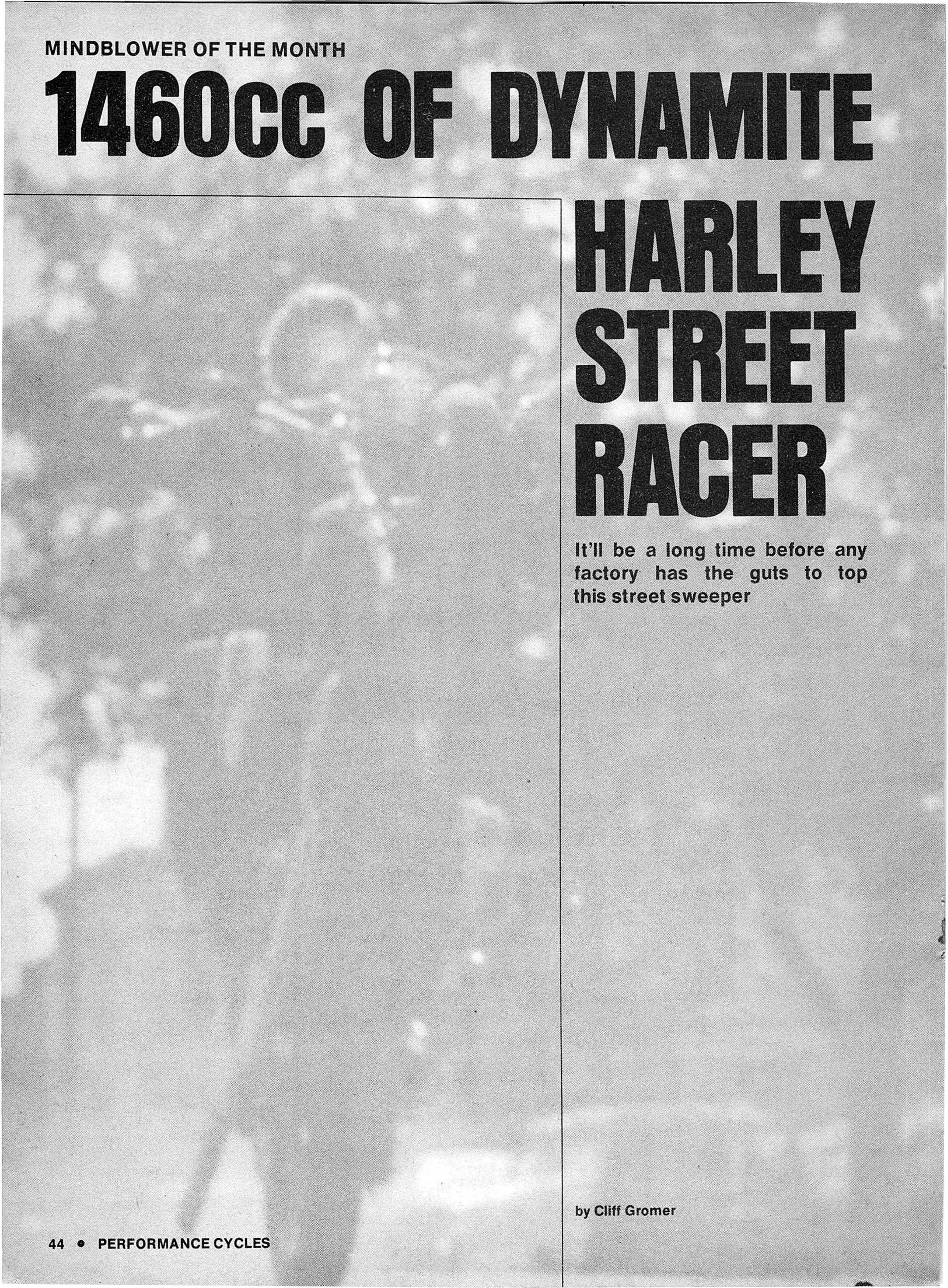
Frame and Running Gear—The lights may be removed. Handlebars, seat, fenders, footpegs, sidecovers and shock absorber dust covers may be removed, replaced or modified. The frame may be modified to the extent of accepting rear set road racing footpegs. However, the steering head angle, engine mounting position, swing-arm length, rear shock mounting points, etc. must remain absolutely standard. The wheels must be the standard steel rims laced to the standard brakes. Brakes, however, may be modified through the use of racing linings on the standard shoes and may be vented to promote air flow across the drum surface. Tires are open except for the stipulation that they cost no more than $20 each. This excludes the expensive and fast wearing racing-only tires such as those manufactured by Dunlop and Goodyear—even if they are purchased secondhand within the price limit. Tires must have a full street pattern tread. No knobbies or trials-type tires. The brake lever and gear change lever may be modified to reach the rear set footpegs. Different weight oil may be used in the forks. A fairing may be added to the machine provided it is fitted in the manner proscribed by the AMA.

Safety Regulations—Every rider must be equipped with a full coverage crash helmet, full leathers and 12-inch high leather boots. He must also have goggles and leather gloves. The oil plugs and fillers must be safety wired. If a machine used on the street is to be raced, its lights must be taped and the license plate removed.

Rider Classes—Since the machine is limited to 100cc, the weight of the rider will be a definite factor in the performance of the machine. Therefore, the riders will be grouped according to weight instead of age or experience: Class 1—up to 110 lbs.; Class 2—111-150 lbs.; Class 3—151-199 lbs.; Class 4—over 199 lbs.

MINDBLOWER OF THE MONTH

1460cc OF DYNAMITE



HARLEY STREET RACER

It'll be a long time before any factory has the guts to top this street sweeper

by Cliff Gromer

AND THEN THERE was Harley-Davidson. Huge, heavy, dominant. Able to get out of its own way only by virtue of its massive displacement mill.

And then there was Marty Altholtz. Huge? Not exactly. Heavy? There are some tendencies in that direction. Dominant? More of a nice guy type. Marty and Harleys have been together for as long as Marty's been able to ride. Big Harleys. 74s. Full dressers. Yards of gleaming chrome. Lights. When you finish wiring up all those lights, you have to stop the reflex action of reaching around and putting gift wrapped presents underneath the thing and the Christmas angel on top.

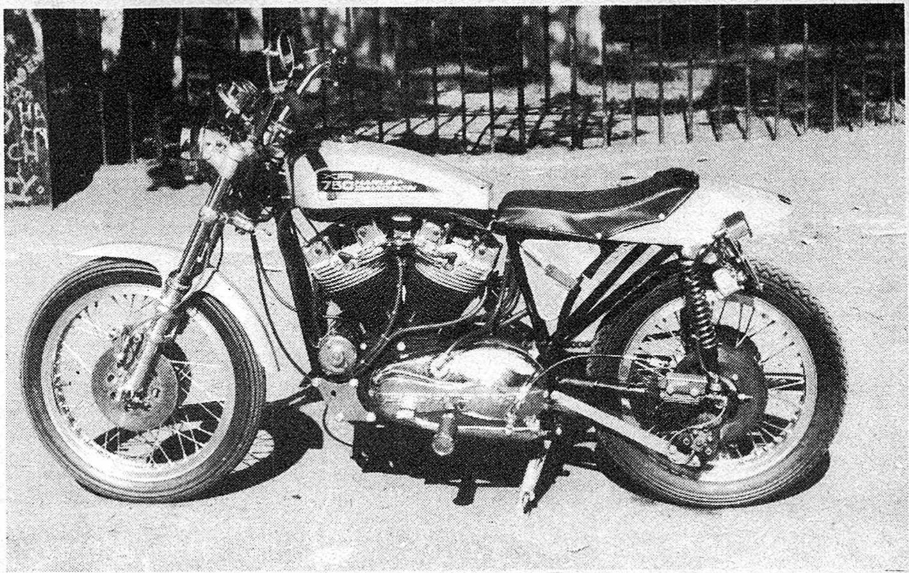
Marty and his 74s. Every once in a while when he'd be cruising along on his King Of The Road Harley-Davidson, he'd get blown off by one of those snotty Japanese imports. Marty would grit his teeth and hope that breathing those obnoxious fumes from that 2-stroke ring-ding in front of him wasn't too hazardous to his health. There was little else he could do.

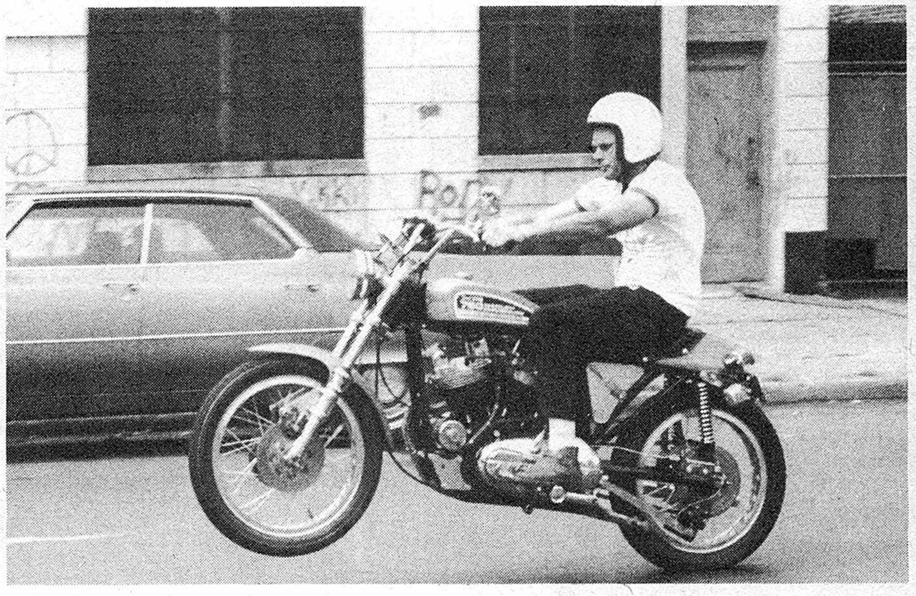
One day Marty was at a flattrack race and he happened to get a good look at Harley's XR racer. Bong! It was love at first sight. That slim trim profile, the flowing line of the integral seat and rear fender. Now if it only had a little more than that 750cc engine. Hmmmm.

And then there was Mike Brant. Mike's a serious soft spoken guy in whose hands socket wrenches and screwdrivers are apt to perform feats of magic. Mike works for Marty, who by the way happens to be part owner of Brooklyn Harley-Davidson on Utica Ave. in Brooklyn, N.Y.

Visiting Brooklyn Harley is a unique experience. The shop provides some great entertainment courtesy of the Happy Harley Boys, a strong group of fun loving guys in the back who also know their stuff when it comes to H-D. It's a good idea to wear your crash helmet at all times in the vicinity of Brooklyn Harley, as some of the fun loving boys occasionally toss things around at each other and you could just maybe wind up on the receiving end of a rubber grommet or used oil filter.

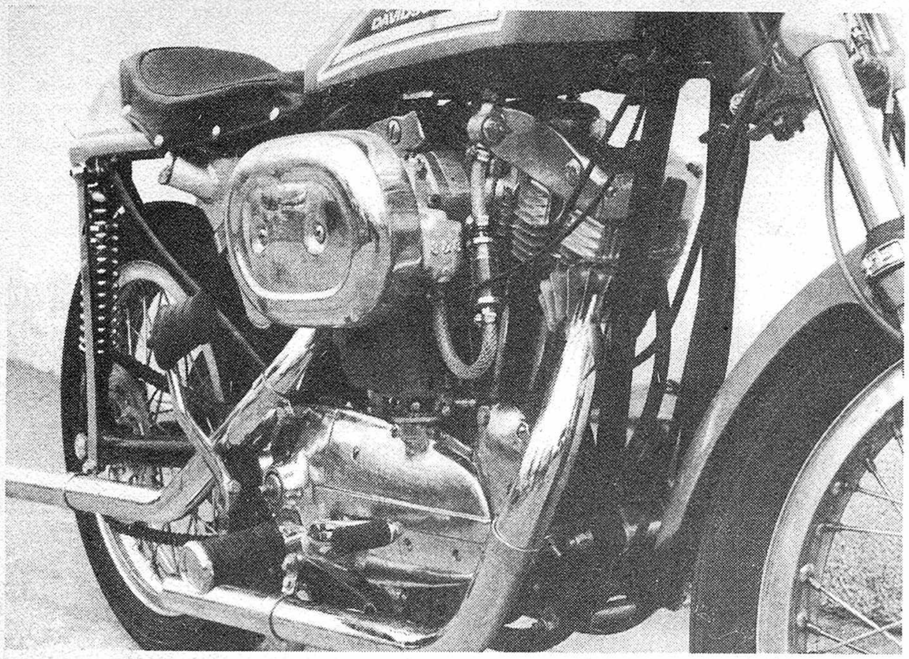
Anyhow, when Marty Altholtz first eyeballed the XR, he envisioned a dynamite street bike. A slim lightweight frame wrapped around a big big mill. A sleeper that would not be radical lookswise, but would pack a punch deadly enough to blow off anything on the street. Swapping engines wouldn't be the only hassle, as the XR in stock form comes set up as a half miler—no brakes. It needed a little doing and Mike Brant was the man to do it.


Don't be fooled by the '750' on the tank. There's 1460 ccs in that mill.


Roger Reiman takes the XR for its first run.

Mike's been building bikes and engines for eight years. He also holds a national drag record in GG/Modified class at Atco drag strip. Mike started the project with the stock Harley XR frame. No additional gusseting or bracing was added. A Lyster-Ceriani front end was hung on along with a Colin-Lyster front brake utilizing dual hydraulic discs. This setup is about the ultimate in whoa power. The rear binder is a modified H&H caliper and master cylinder unit with a custom disc that was machined from cold steel. The custom caliper hanger is machined from 4130 steel. A Harley KR steel rear hub replaces the stock XR aluminum hub, as strength in this area is more crucial than saving weight. The brake pedal is stock Harley Sportster. Rear suspension is via stock Girling units with chromed springs. The oil tank is stock, but the footpegs are an added item as is the Bates headlight to pierce the inky gloom of night.

Stock Harley XLR front and rear engine mounts are used to accept a 900cc Sportster engine that's been bored and stroked to 3⅜ x 4⅝-in., giving the mill a new displacement of 1460cc (83 cubes), almost double the size of the stock XR engine. This is very appropriate as Marty Altholtz is almost double the size of the stock rider. Custom overhead engine mounts were needed because of the



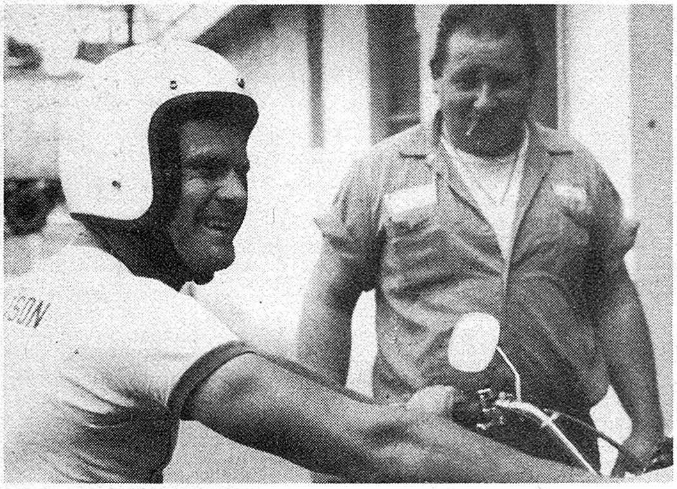
When fine tuned, 90 hp mill should make the bike a 10 second machine in the quarter mile.

increased stroke.

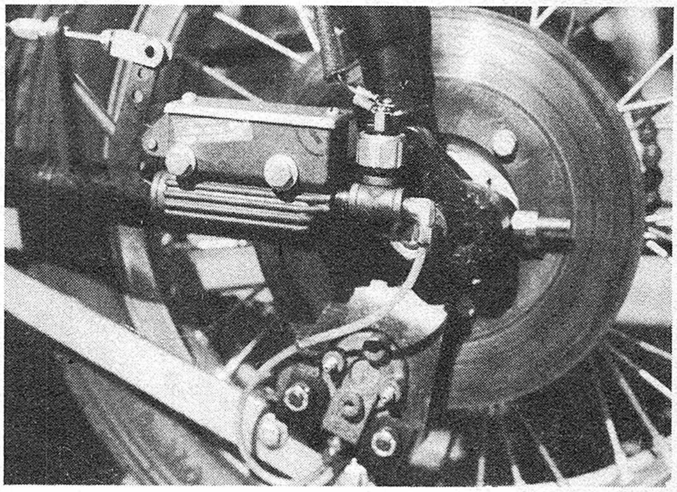
Extensive work went into the engine. Cylinder head ports are ported and polished as are the manifold ports. No head gaskets are used. The heads were machined with a flange and then lapped in.

A 1 ¾-inch S&S carb sucks the go juice into the cavernous cylinders via 1$^{15}/_{16}$-inch XLR intake valves. Egress is provided by stock XLR valves that have been hardchromed and cut down to Sportster size. Stock size exhaust valves are used for a better midrange punch. Both intakes and exhausts use stock Sportster valve springs. S&S pushrods, Sifton collars and keepers, hardchromed roller tappets, a Sifton cam and rocker shafts and arms shimmed to zero clearance with Teflon washers make up the valvetrain.

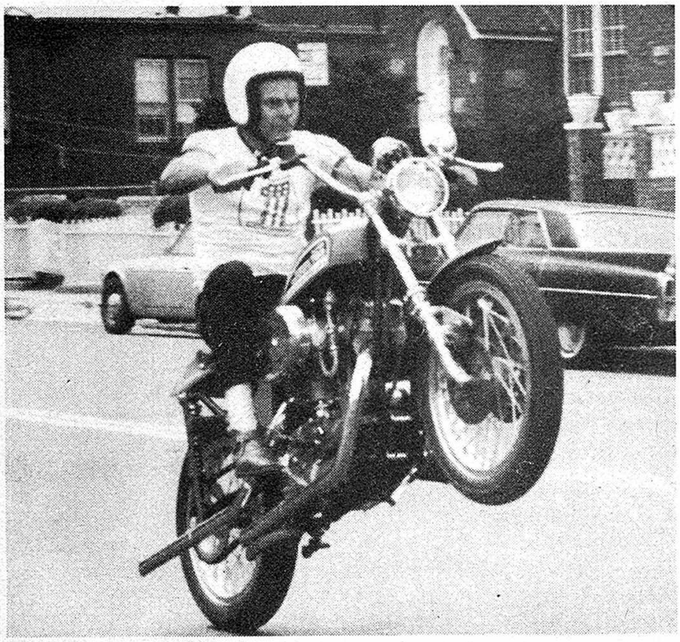
Mike set up the entire cam case with roller bearings including the



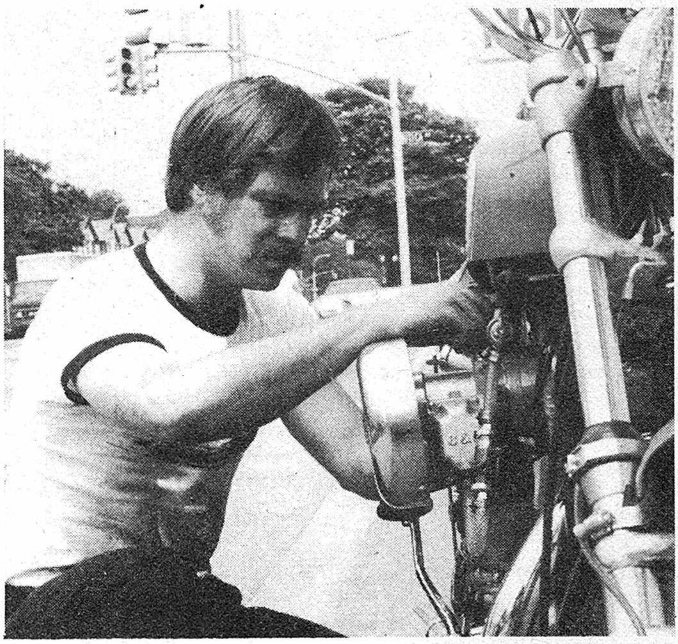
Reiman's reaction to bike is obvious. Marty Altholtz looks proudly on.



Rear binder is H&H caliper and master cylinder unit.



Gobs of torque make wheelies a snap.



Mike Brant making final adjustments before Rog takes a trial run.

number two cam. All four of the camshafts are shimmed to zero clearance with Teflon washers. Connecting rods are polished and the flywheel has been balanced. The lower end consists of stock Sportster bearings that have been fitted to a cut down 74 bearing container, which is a full cage retainer. Free floating Alcoa forged pistons do their thing inside the Dytch jugs, squishing the mixture with a 10 to 1 compression ratio.

Friction and drag throughout the entire engine are reduced to the minimum wherever possible. Cam and cam gears are lapped in as is the oil pump gears and shaft. An unusual feature of this mill is that the overhead oil return holes in the cylinder heads have been blocked off. The oil is returned to the sump via external lines. This keeps oil out of the lower end of the engine which reduces drag.

Electrics for the most part are stock with a remagnetized and blueprinted magneto.

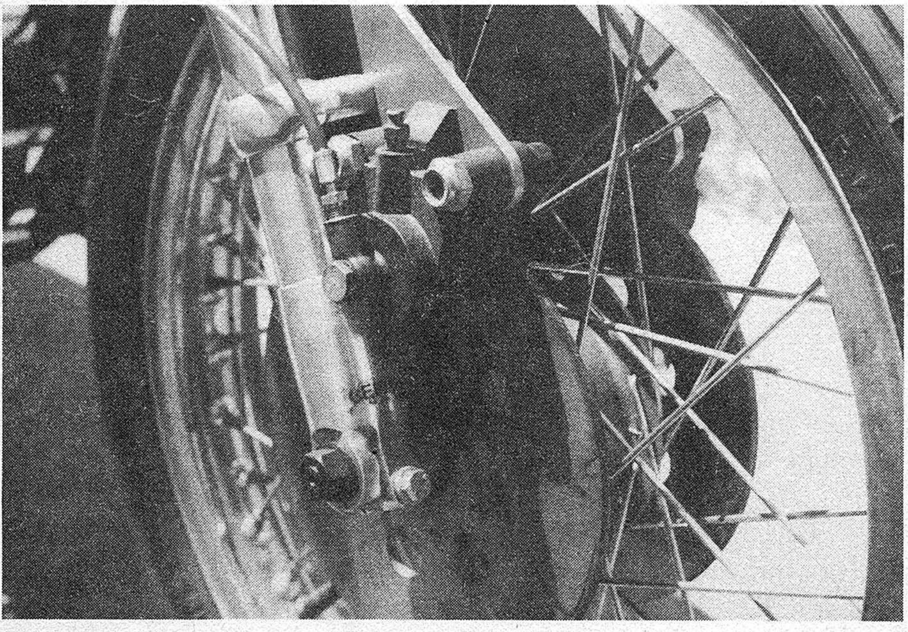
The transmission is a blueprinted and line lapped factory C-box with the speedo drive removed and a steel sleeve over the lower boss for strength. The estimated 90 horses of brute power is spun into the tranny via a 1970 Harley H clutch which has the advantage of running two main bearings. Two additional friction plates were added to handle the increased torque, bringing the total to nine. Three XLR and three early model 74 clutch springs bring it all together where it's delivered by chain to a 46-tooth rear sprocket.

The stock Sportster generator is almost a paradox, copping ponies off an engine that's been coaxed to yield its ultimate power. But it's a street bike and that means compromises.

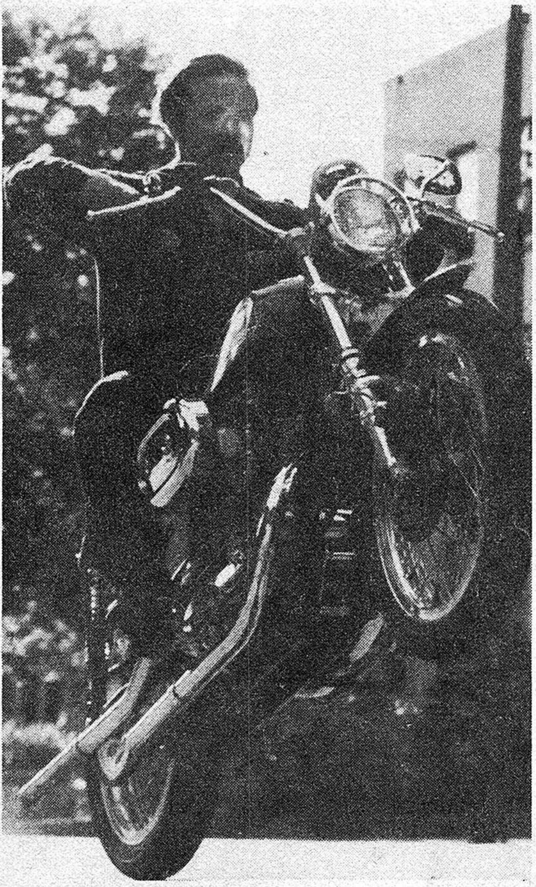
Power to the pavement is handled by an Avon 3.25 x 19 GPL up front and Avon's 4.10 x 18 GP skin on the rear.

Roger Reiman of the Harley fac-

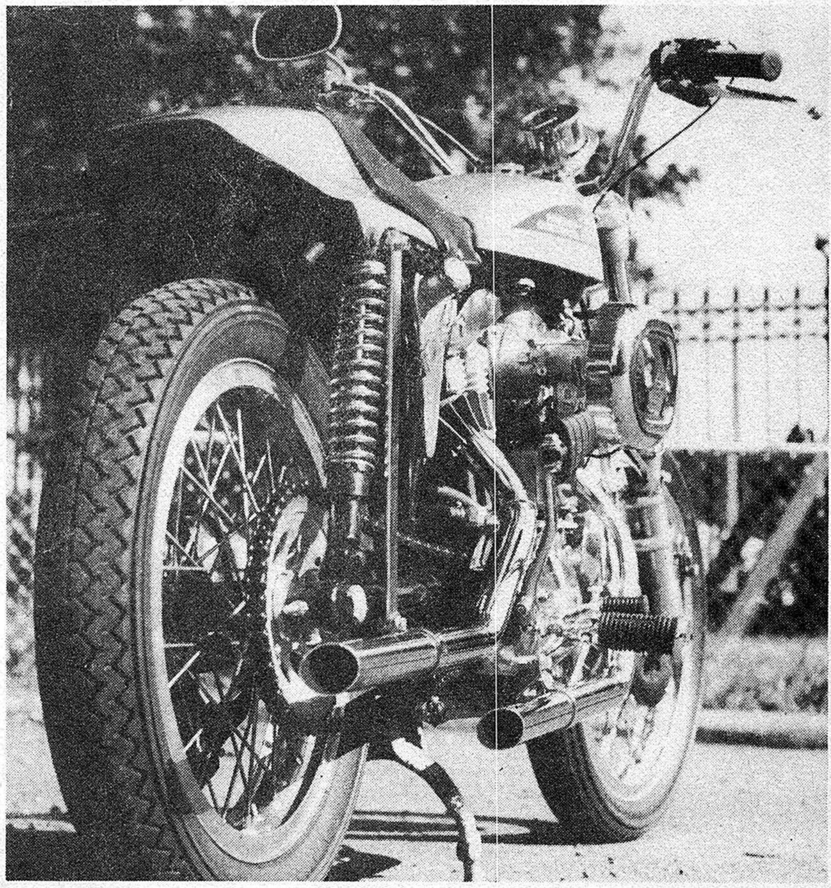
(Continued on page 68)



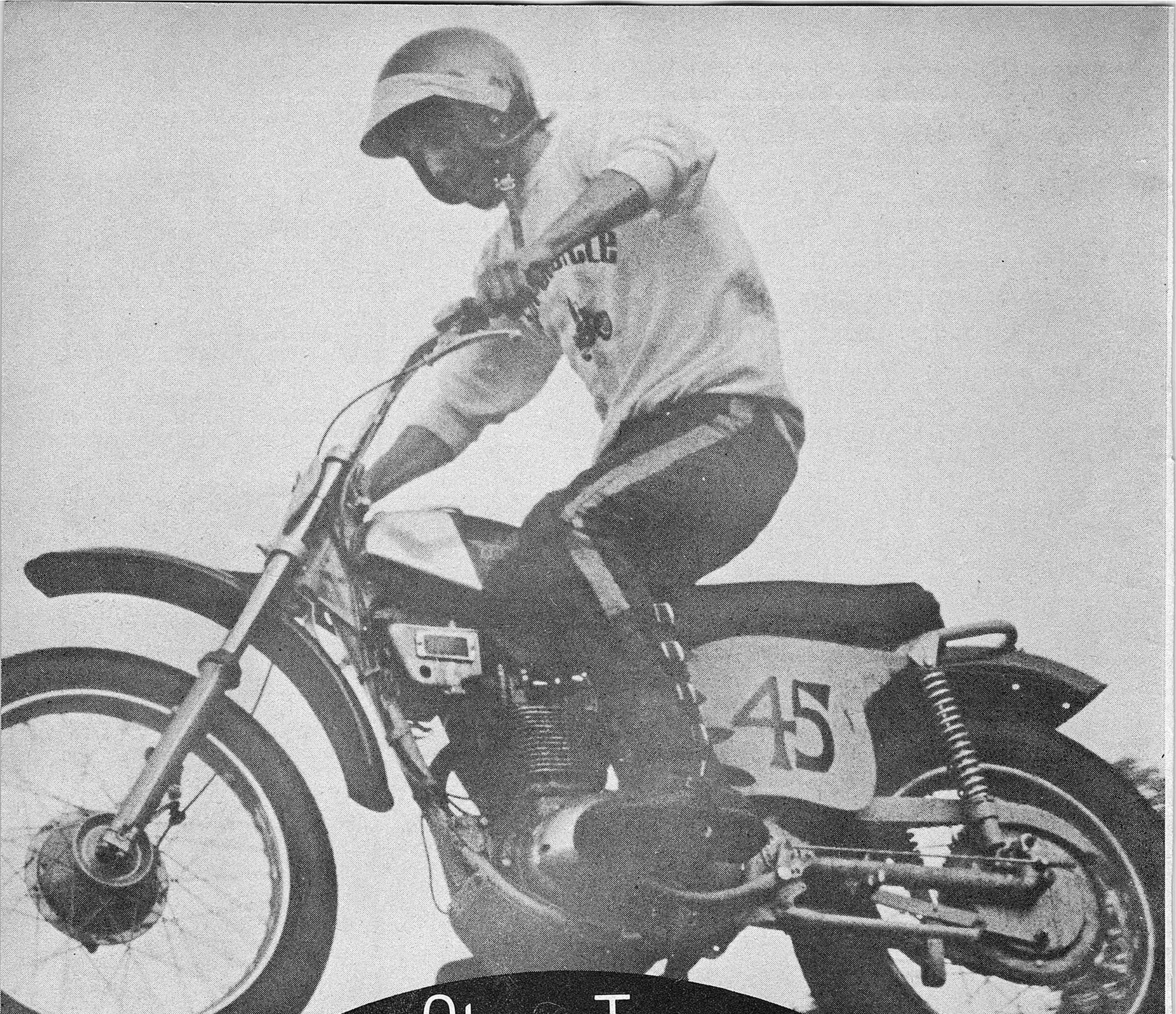
Colin-Lyster dual hydraulic disc brakes up front, for those screeching halts.



Mike Brant checking out the higher altitudes.



Straight through pipes is all you'll see of XR once it's in action.

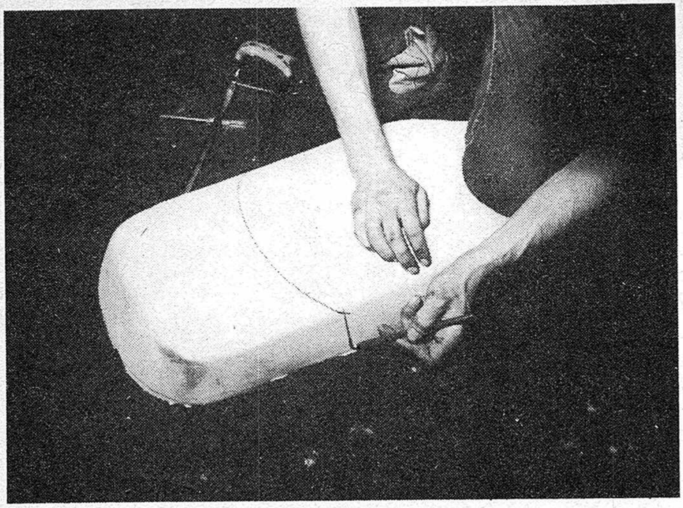


Stage Two
PROJECT BSA: BUDGET MOTORCROSSER

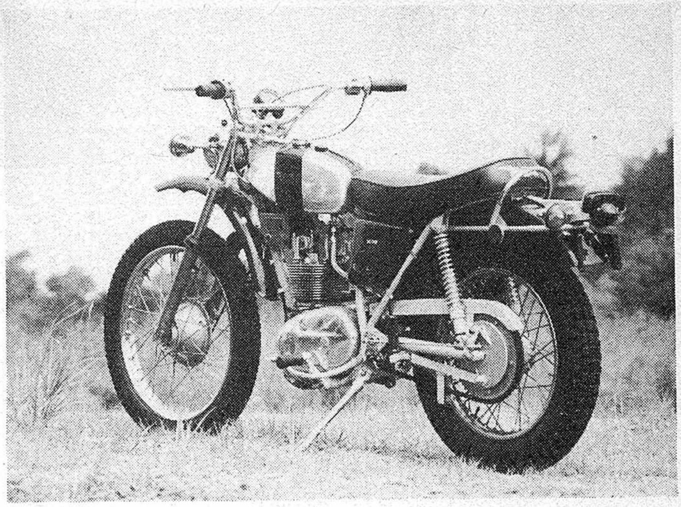
For under $8, we've got the little BSA looking like a race ready motocrosser

BY TOM BAILEY

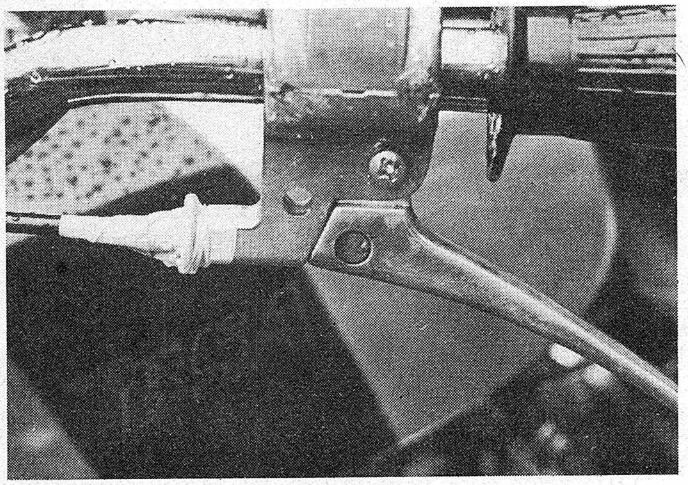
PHOTOS BY BOB SLAUGHTER AND CARL CAIATI



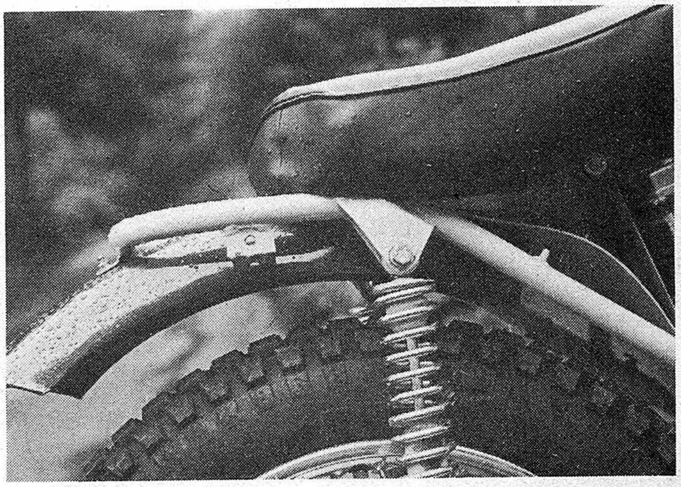
One-third of the seat was chopped off with a hacksaw.



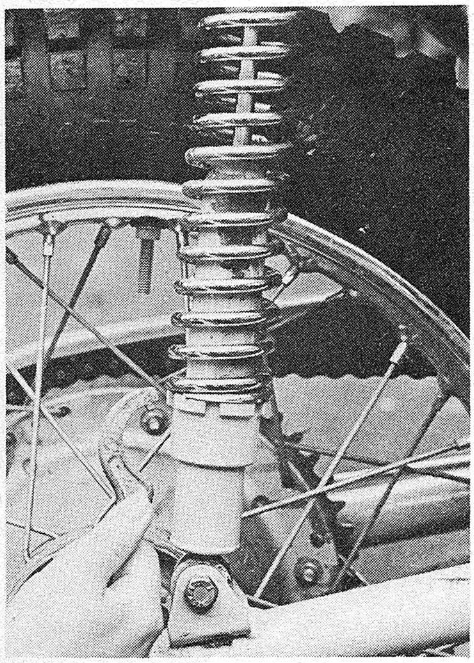
As you remember, this is what bike looked like in stock trim.



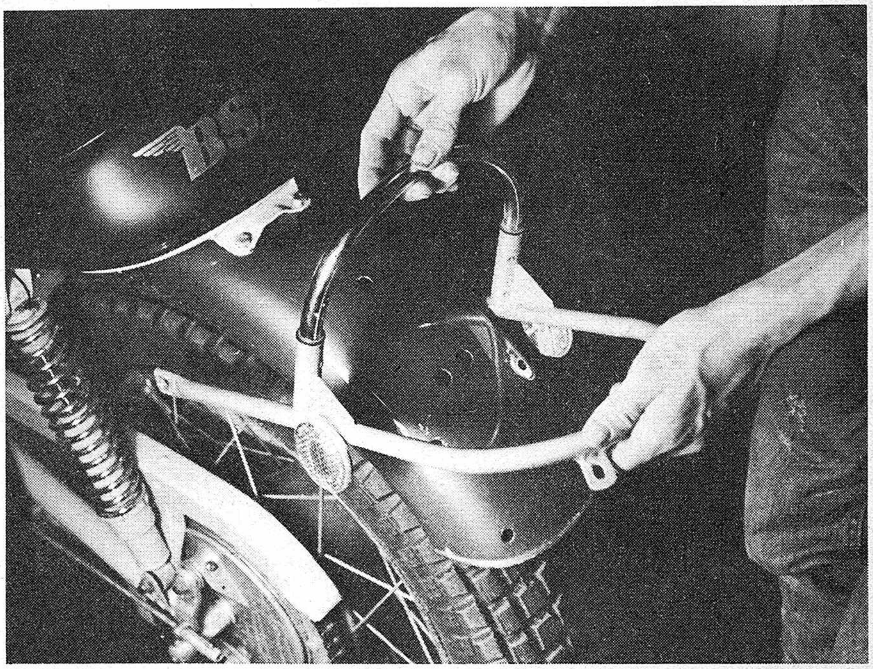
Closeup of clutch cable taped on lever mount.



Twenty inches of the rear fender were chopped off.



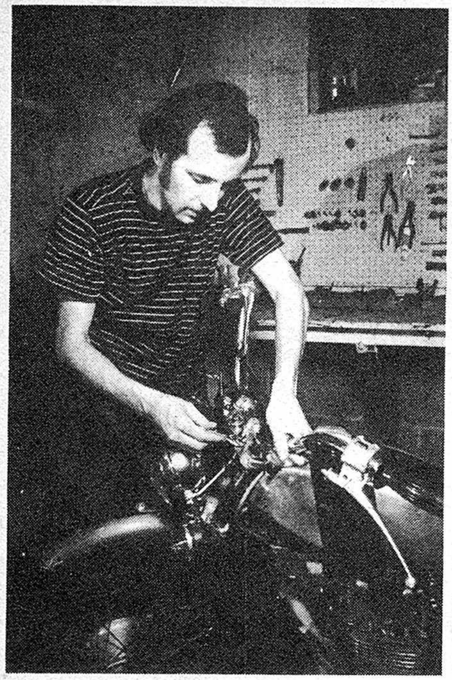
Adjuster tool to prepare the adjustable shock.



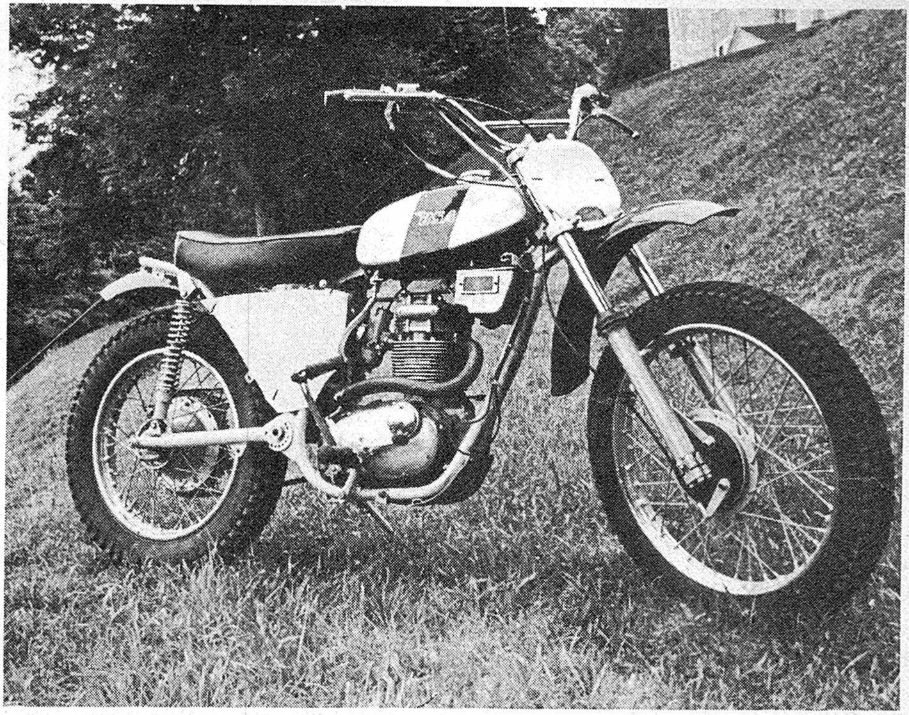
Rear fender brace weighs 2 ½ pounds and should be removed.

MOTOCROSS IS ONE of the fastest growing sports in America. The rough and tumble action found in this form of motorsport is tremendously exciting to rider and spectator alike. And lately the participants and machines used for motocross have been gaining increased exposure in the mass media.

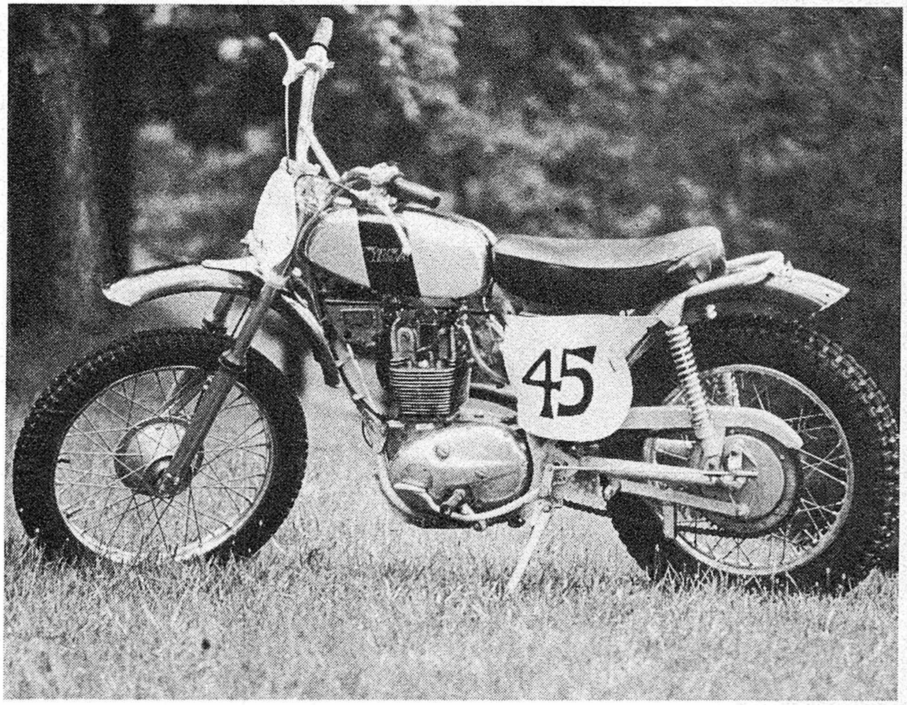
With the attention and interest of a wider audience have come new tracks and new riders. And perhaps many more people would like to give motocross a try but find



Removing the headlight was a snap.



The finished product! Total investment for materials was a whopping eight dollars.



Chainguard was left on because it also serves as a chain guide.

that they can't afford it. After all, it *is* rather expensive. If you figure on buying a new motocross bike, the tab would be at least a grand. And a secondhand bike would run between six and eight hundred dollars.

There are very few people who can afford to spend even six hundred dollars to give anything a try. But there are a lot of people who have purchased street and trail bikes. Almost every manufacturer produces an enduro-type machine and most of them are good bikes.

It is for the person who owns a BSA, Triumph, Suzuki, Yamaha, Kawaski or other brand street/trail bike and who would like to try motocross racing that we are doing the Project BSA: Budget Motocrosser. We will be converting a stock 250 BSA Victor into an all-out motocross bike—on a budget. However, we will be doing it in three stages.

Stage One is a road test of the stock bike which you'll find on page 23 of this issue.

Stage Two will be a specific guide to setting up the BSA for motocross. The information can be used as a general guide to setting up any of the other brand dual-purpose bikes. Stage Two will deal primarily with the basic modifications necessary for competition. These will include removing the lights, making number plates, removing dead weight, what not to remove and many other small modifications. Everything we do will be easily duplicated by the average rider without special tools. And at the end of Stage Two, the bike will be ready for competition. It won't be incredibly fast or the world's best handling machine. But it will be completely suitable for someone wishing to give motocross a try. Stage Two will begin in several paragraphs.

Stage Three will be a detailed look at engine modifications to the BSA. We will do a series of engine mods designed to increase the power of the BSA. And we will also be making some changes in the suspension department. At the completion of Stage Three, the bike will be good enough to compete with the production scramblers frequently seen in action at your local track. At least we hope it will! Stage Three will appear in the next issue of PERFORMANCE CYCLES.

After the bike is completed, we will continue to race it for several months and we will keep detailed records of how the machine performed on each outing. When we feel the machine has reached a level of sophistication that is acceptable for competition, we will do a short article listing the results and any modifications made since the completion of Stage Three. However, this article is at least two issues away.

OK. Now let's get into it.

There were several reasons we chose the 250 BSA as our project bike. The primary reason however could be mentioned in one word—namely, sturdiness. Upon first seeing the bike, the initial impression you receive is one of functional strength. And it is not a misguided impression. The frame, forks, shocks and wheels are identical to the units on the 500 BSA Victor MX. And

(continued on page 67)

ROAD TEST

125 DKW ENDURO

Tough enough
to win the Baja.
Tough enough for you

PHOTOS BY DAVID GOOLEY

The DKW gives the utmost in confidence, no matter what the situation.

The bike was rock steady through all types of terrain.

IF YOU HEAR THE name DKW and think of an automobile instead of a motorcycle, don't feel bad about it. The name DKW is new to motorcycling but the machine is not. You are probably more familiar with it than you might think.

If you know what a Sachs is, then you know what a DKW is, because a DKW is the old Sachs and the Sachs is a new DKW, or something like that. It's just a simple matter of name changing and the Sachs name has been changed to DKW. That's all. It's the same high quality machine as before. Only the name plates are different.

DKW produces three different motorcycles that are all basically the same, two being made for motocross and desert racing—a 100 and a 125—and one set up for enduro and trail riding, this latter model being the subject of our test. It's a 125 that will handle the rigors of enduro competition and at the same time be equally at home meandering along a peaceful back trail.

The DKW (Sachs) motorcycle is relatively new to this country having only been imported from West Germany since late in 1968. Since that time, however, it has made quite a reputation for itself, winning many major competition events and establishing the bike as one to be reckoned with.

Minor changes have been made since the machine's introduction to the American market, the biggest ones in the head and cylinder area.

The engine is a 2-stroke single utilizing piston port induction and a 5-speed constant mesh gearbox that is shifted on the left. A square bore/stroke of 54 x 54mm totals out to 123cc of displacement which pumps out 17 horsepower—1.3 less than it's motocross counterpart.

The "sunburst" type cylinder head will quickly catch your eye. But those radial fins aren't there for looks. This much increased (over previous models) fin area will serve to keep the engine running much cooler, effectively maintaining horsepower output.

The crankshaft rides in ball bearings and helical cut gears (for quietness) transmit it's power to a multidisc clutch.

Pre-mixing the fuel is necessary since no automatic oil metering is provided. A 26mm Bing centerfloat carburetor supplies the mixture to the cylinder. A thumb operated starting lever is found next to the throttle twist grip and richens the mixture to facilitate starting when the engine is cold.

A folding kick lever is found on the engine's left side, a position awkward to most U.S. riders. Starting our test bike was akin to plugging in an electric motor. It fired instantly every time, which made the left hand kick lever location no problem.

Air filtration is provided by a dry-type element that is housed in it's own little silencer box which nestles up to a chamberlike affair that in turn is attached to a short piece of tubing that runs into the frame tube. Air passes through these pieces, through the frame and into another short piece of tubing where it reaches the carburetor.

It all sounds very complicated but really isn't. The system that will not be affected by water of reasonable depths. For those who desire, Filtron-type elements are available and easily installed without modifications to any parts.

The seat unbolts at the front and flips up toward the rear of the bike instead of to the side as in many other motorcycles, allowing access to the air cleaner. This hinge is in plain view and bolted to the rear fender. It looks rather crude and more like an afterthought than anything else. A side mounted hinge allowing the seat to flip sideways would be a much better arrangement and would allow quicker and easier access to the air cleaner. It would also eliminate that unsightly hinge.

The wheelbase on the DKW is fairly short at 51 inches and you would guess that a machine with this short a wheelbase would not handle that well. Guess again.

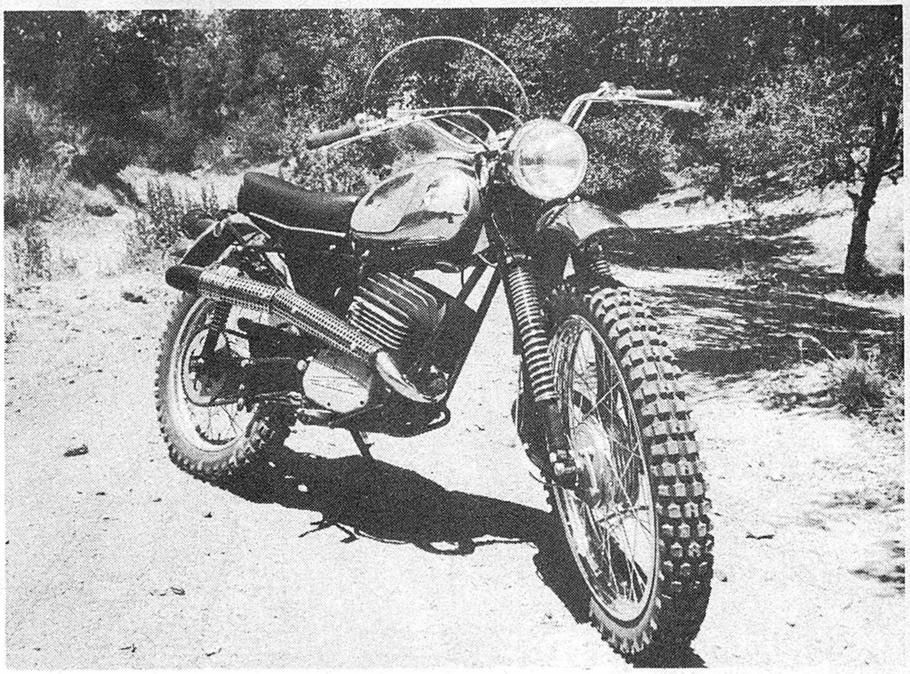
The DKW is very stable and predictable. You feel as though you're riding a much larger bike. It gives you the utmost confidence in any situation.

Much of this feeling is due in part to the basic frame design which utilizes a center backbone that connects the steering head with the swing arm pivot area. A double downtube wraps under and acts as a cradle for the engine/transmission unit. A skid plate perforated with holes protects the lower end and frame rails while allowing foreign matter to fall through instead of collect in the pan. Tubing welded to the outside of the rails protects side cases and serves to ward off any sticks or branches that might wedge in between case and shift or brake lever and bend or break them off. These tubes are new and were not found on earlier models and are a worthy addition.

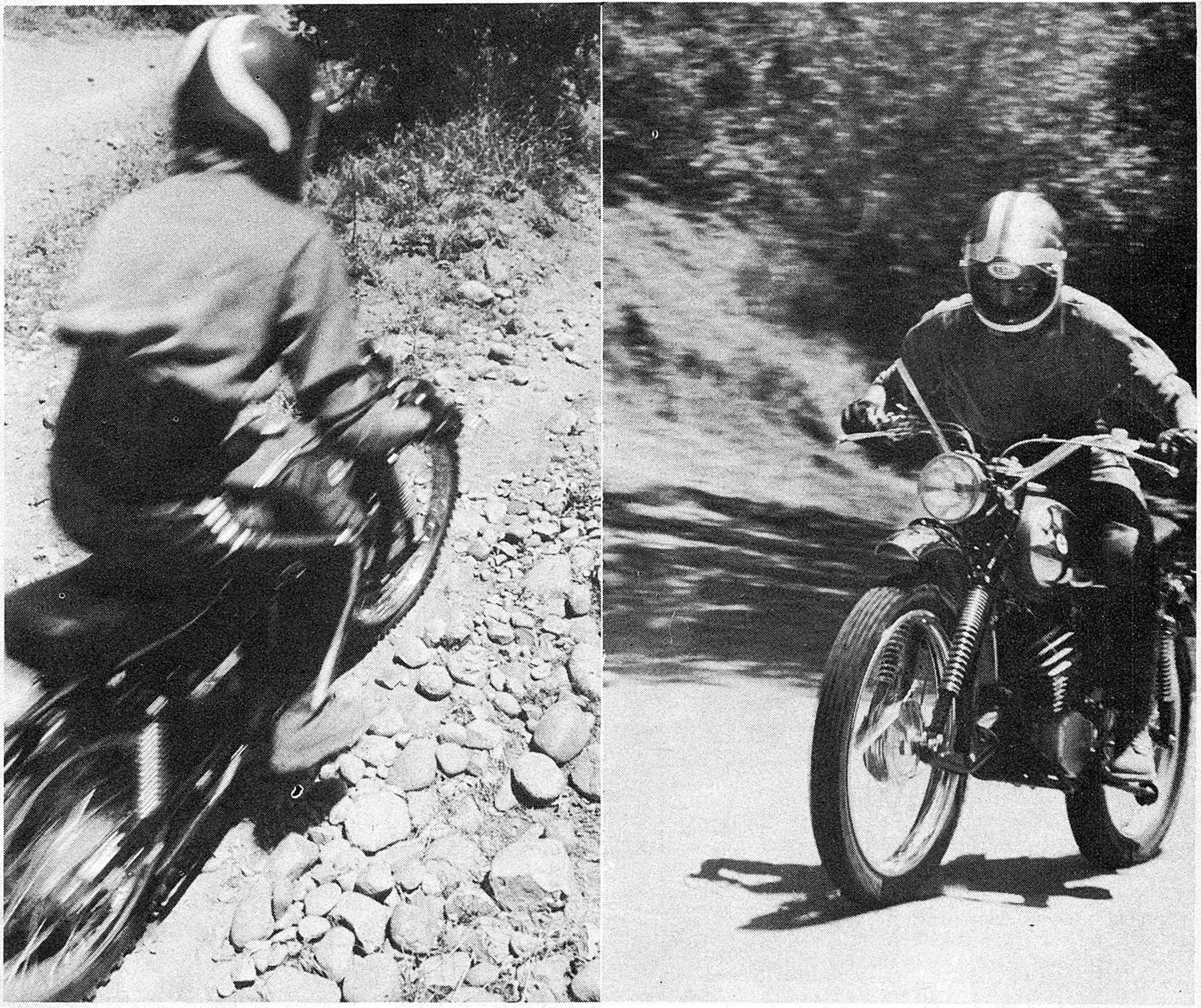
Leading link front suspension certainly adds to the excellent handling characteristics of the little DKW. It is probably one of the strongest types of front ends in use today on any motorcycle.

The links will absorb almost any amount punishment without failure due to their construction of crossbraced steel fork tubes which are furthur supported by a tubular steel loop that connects to the pivoting ends.

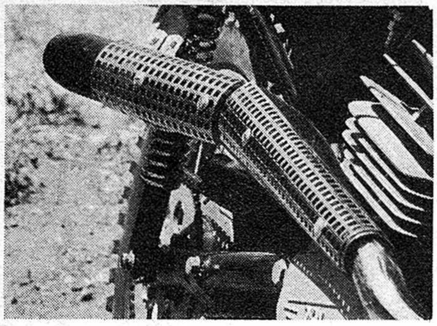
Boge dampening units attach to the ends of the steel loop tube near the axle mounting point and connect at the top of the fork



The DKW looks business-like in its natural habitat of dirt trails and hills.



The DKW has the feel of a large machine. Part of the reason is it's center backbone frame. It connects steering head to swing-arm.



Exhaust system is extremely quiet.

on a welded bracket. The Boge dampeners are equipped with variable rate chrome springs fitted on the outside of the unit. Total travel is 6.3 inches.

If you've never ridden with this type of suspension before, you'll be surprised when you apply the front brake because the front of the bike rises instead of lowering as with most motorcycles. Don't be alarmed. This is common to this type of suspension. Handling is *not* affected by this action.

Rear shocks are also Boge and are non-adjustable with 4.6 inches of travel. They perform beautifully and only occasionally can they be bottomed.

Metzeler knobbies are found front and rear and carry a 3.00 x 21 and 3.50 x 18 size respectively and mount on chromed steel rims. Alloy hubs are used both front and rear.

A 2.6 gallon steel gas tank bolts to the frame and is rubber mounted. The tank cap screws on and the one on our test machine leaked at a fair rate. Ample chrome and bright red paint finish off the tank and it seems to compliment the black frame and chromed steel fenders nicely.

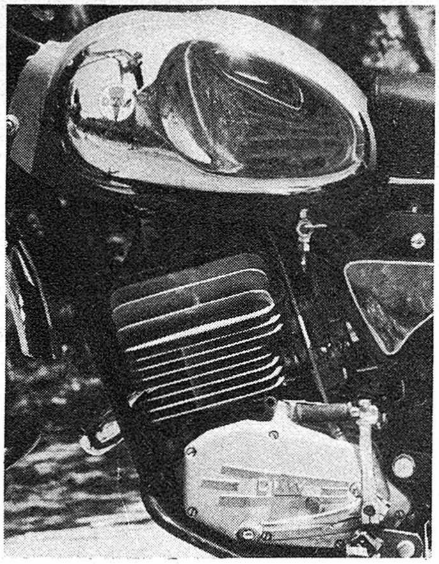
The exhaust system is high mounted and tucked well in so that it does not interfere with the rider. It's a tuned silencer that keeps the noise in the quiet range and yet doesn't hold down performance too badly. If a spark arrestor is needed, one is available from DKW as an optional accessory. This is a mandatory item if you are going to do any riding in the national forests. Chromed heat shields protect the rider from exhaust burns.

The sidestand has a wide, round plate at it's base so the stand won't dig in and sink into the ground when the bike is parked. Little things like this are much appreciated.

Pegs are springloaded and fold back at a 45 degree angle so when the machine is moving forward and is spilled, they move back in the direction that will not damage them. Footpegs that fold in a 90 degree angle usually get bent backwards in a fall. That won't happen on the DKW.

Ignition system is a Bosch 6-volt dynamo-magneto with the battery for the lights and horn located in the left sidecover that comes off quickly with the removal of two screws.

The ignition switch does not use a key as is common. Instead, a plug-in type notched rod is used. This is inserted into a hole located on the top side of the headlight and has a notched position for off and on. When you leave your machine you take the plug with you. This means that any sickie with one of these devices can saunter over to your parked machine, plug in and cruise merrily away with your $800 motorcycle. Our advice would be to keep the bike under your watchful eye and chain and lock it.

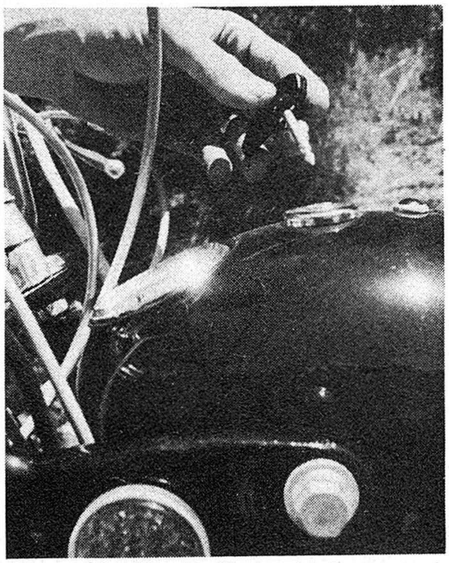


Finned cylinder head keeps engine running cool.

The little DKW was a pure ball to ride. Whether creeping along a tight, rock covered trail or charging up a silt covered hill, it was always rock steady.

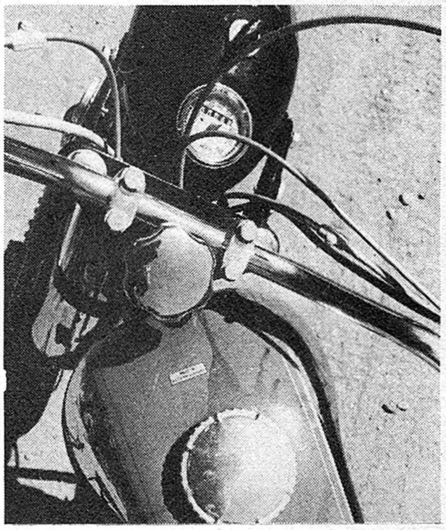
If you take your riding seriously and can appreciate a really good machine that goes where you point it and does what you want it to do, then we suggest that you look into the DKW. It is not cheap. But it *is* certainly worth every penny you pay for it in terms of pure enjoyment and fun. For the competition rider, it offers a machine that will absorb the roughest kind of treatment and bounce back for more.

A recent DKW ad concerning it's class victory and very high placing among bikes much larger in displacement at a major cross country race proclaimed, "If Theirs Is The Better Machine, What's Ours?" We can give them an answer now that we've throughly tested the bike—great.

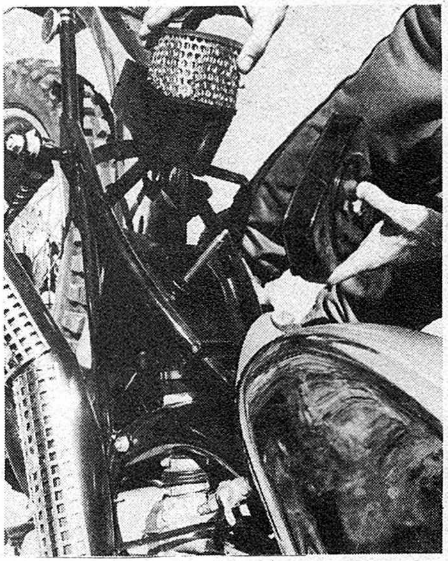


Note unusual position of ignition key socket.

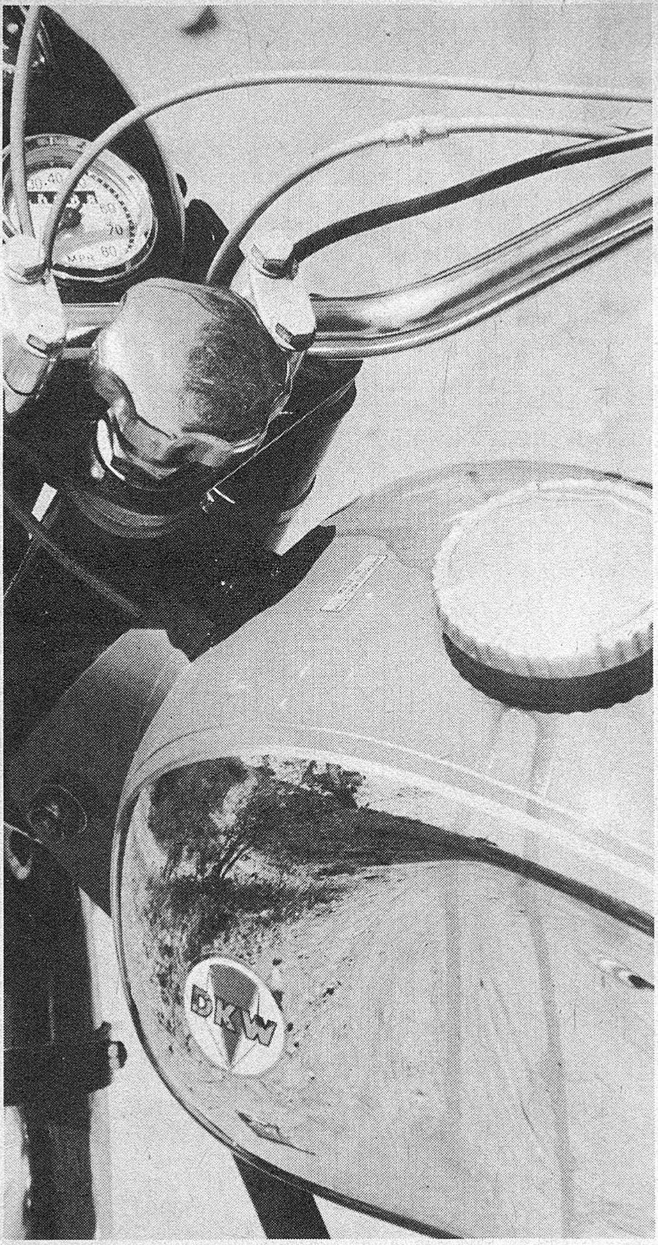
Leading Link forks do a great job of absorbing bumps.

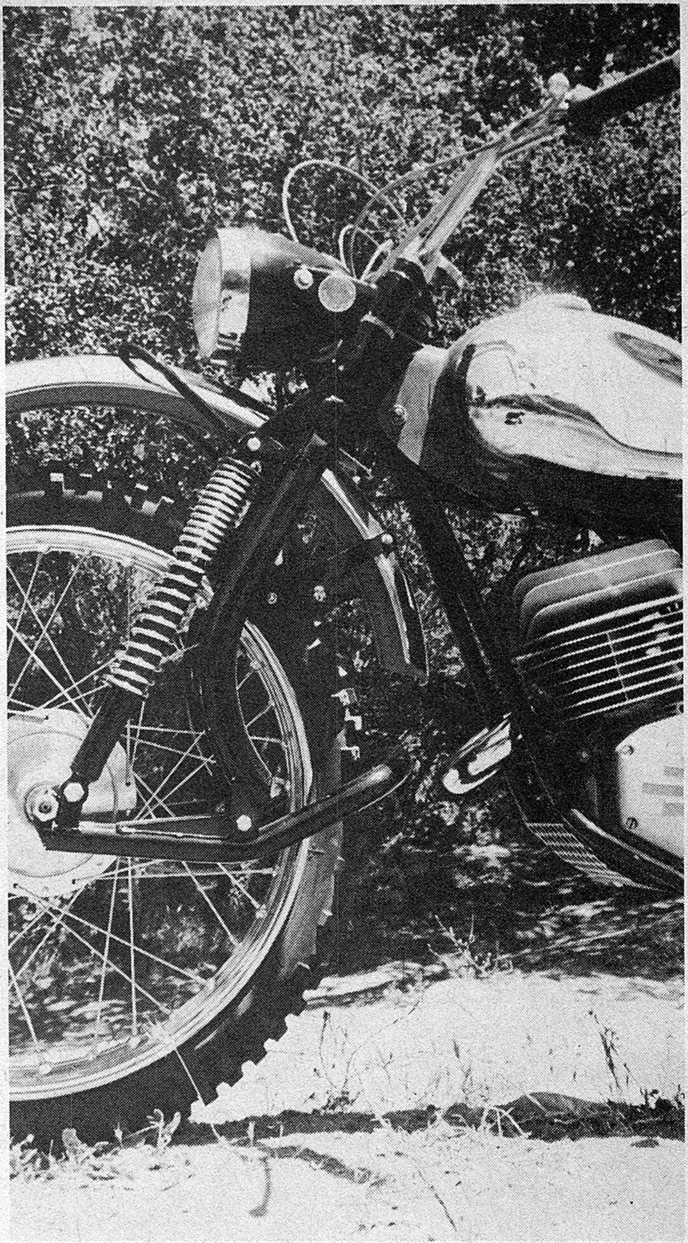


Odometer does not have tripometer.



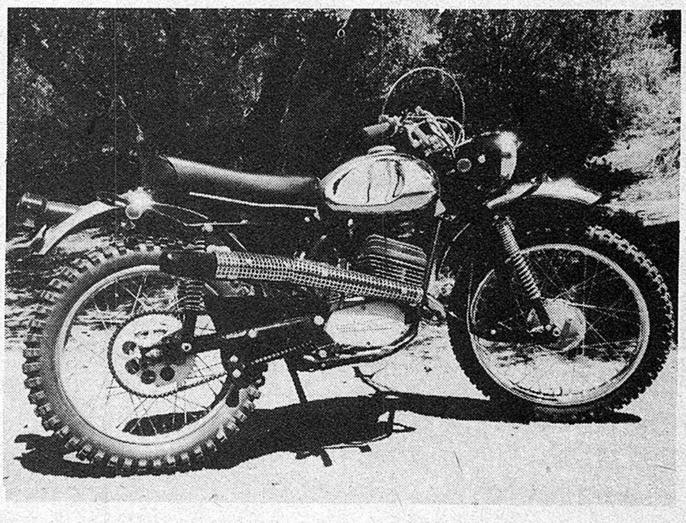
Air cleaner is contained in silencer box.





125 DKW ENDURO

Base price	$795
Engine type	2-stroke single
Bore and stroke	54 x 54mm
Displacement	123cc
Compression ratio	10.8 to 1
Horsepower	17 at 7300 rpm
Carburetion	One 26mm Bing centerfloat
Transmission	5-speed
Clutch	Multidisc
Primary drive	Helical gear
Final drive	Single-row chain
Brakes	Drum
Tire size, front/rear	3.00 x 21/3.50 x 18
Lubrication	Oil-gas mix
Fuel capacity	2.6 gallons
Dry weight	217 pounds
Wheelbase	51 inches
0 to 60 mph	NA
Stand, start, ¼-mile	NA
Top speed	67 mph



BMW +

That's the equation for super street performance in this Wolfsburg into Munich swap

BY CARL CAIATI

The family that rides together stays together. Frank Ryniak and his son are seen riding the BMWVW frequently.

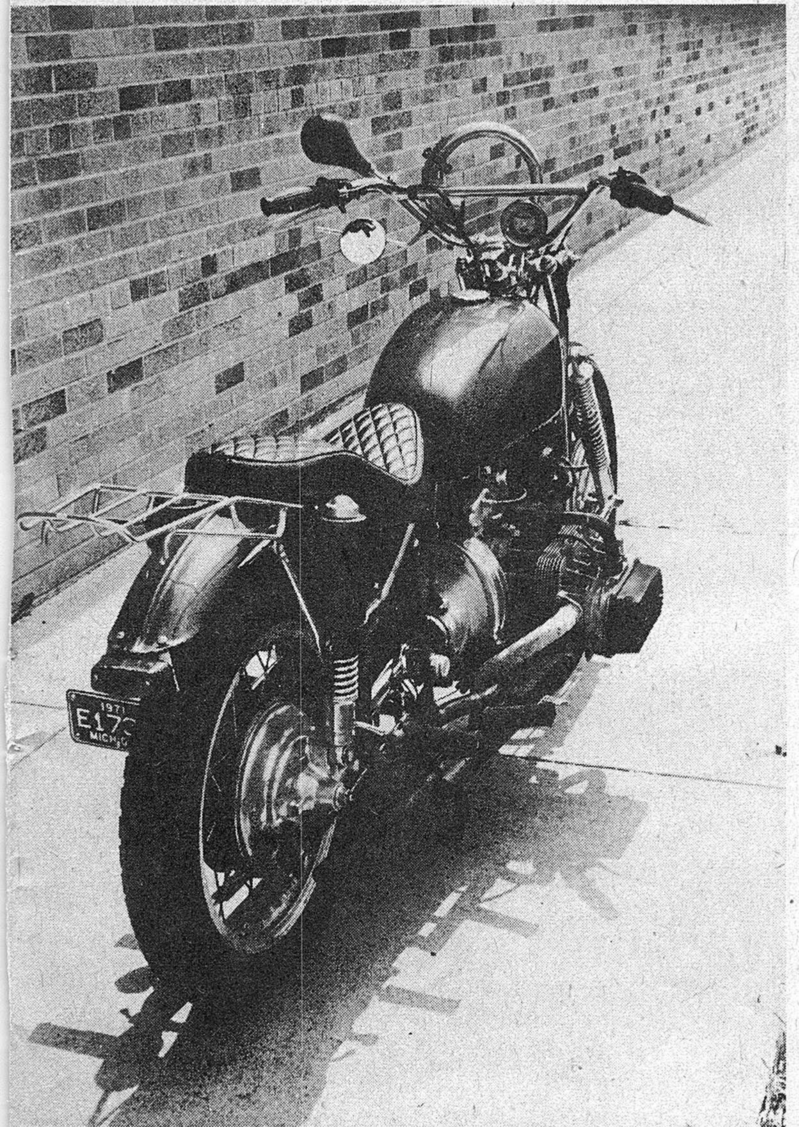
BUG = GO

HOW DO YOU ADD optimum performance on a grand scale to the otherwise sluggish 1962 BMW R69S? The best way is to drop a Volkswagen engine into the frame. Just ask Frank Ryniak of Rochelle, Michigan.

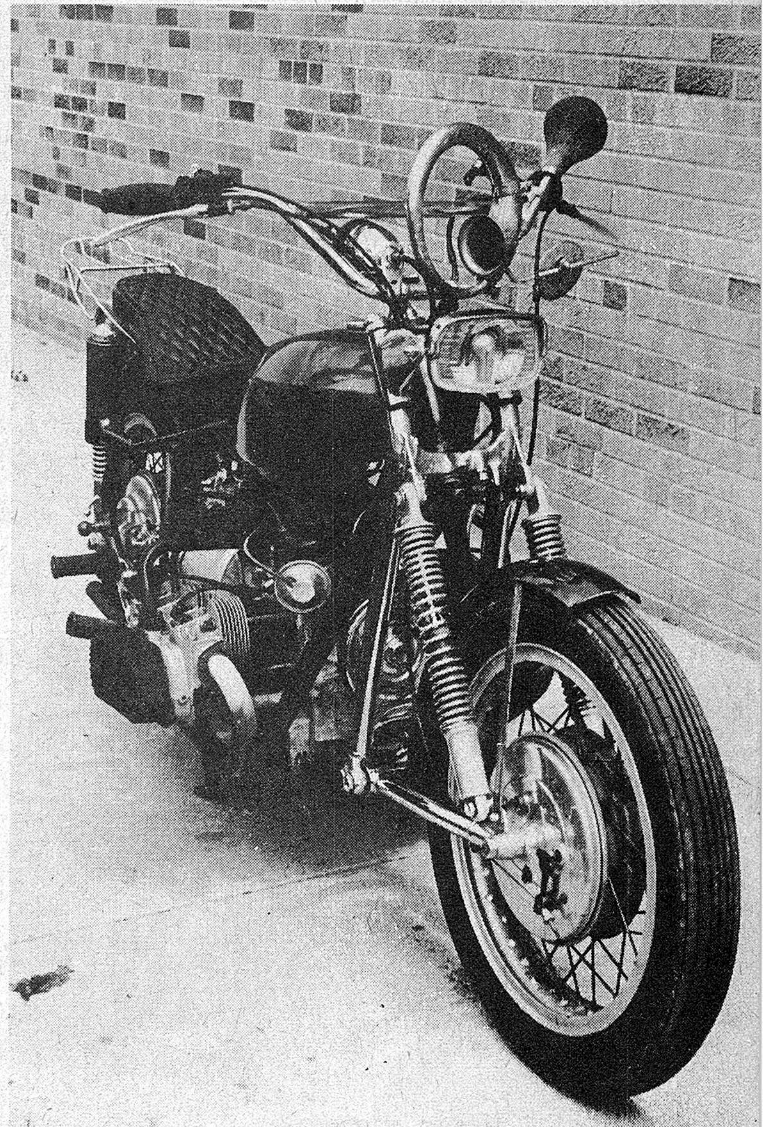
Frank was happy with the average day to day riding performance he got with the machine in stock condition till one day, trying to get a little too much go out of the docile engine, he blew the motor apart beyond repair. In his search for a replacement BMW engine, he came across a fellow enthusiast who cited several instances in which standard Volkswagen engines had been inserted into the BMW frame replacing the stock issue, with excellent results. The idea seemed novel and interesting to Frank, so he went out and purchased a 40 horsepower, 1200cc VW engine and began pondering how he would adapt it to fit comfortably into the R69S frame.

Frank discovered that first the frame had to be extended 3¾ inches and the lower frame tubes widened to accommodate the girth of the VW engine. A transmission adapter was designed and cast and the fly-wheel reworked to accept the BMW clutch assembly.

The engine was then reworked. A ¾ grind EMDI cam was added and



The VW nestles into the frame like it was made for it. Handling on the street is good.



Chromed front forks are one of Frank's few concessions to customizing. Note the French horn.

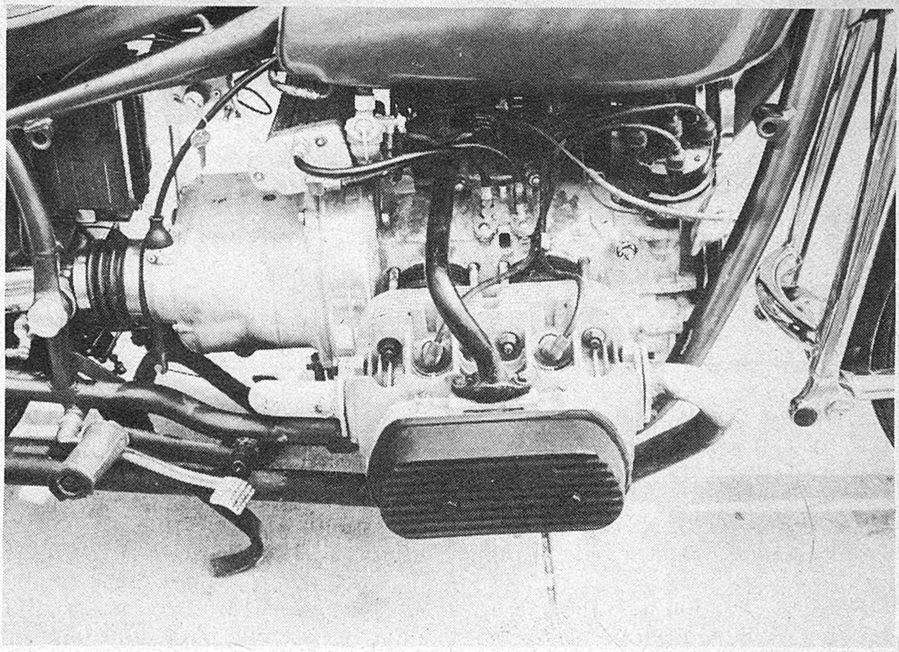
the heads rebored. A new generator saddle was used in order to place the generator close to the motor. An oil cooler, necessary to keep down the working temperature of the engine, was relocated directly under the gas tank exposed to the mainstream of air to aid in cooling.

Though the machine is not considered a custom by Frank, it does have a custom flavor.

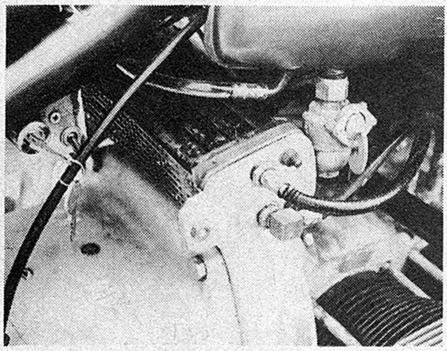
The front fork, though stock in operation, has had the spring covers removed and has gone the full chrome treatment. Pipes are straight, but with minute internal baffles. A slim banana Finch seat replaces the bulky standard unit. Though not as comfortable, it's twice as attractive. The gas tank is a stock 450 Honda type painted candy red to match the frame.

The machine in its modified form is capable of speeds far superior to the standard BMW and will easily overtake even the current shaft driven models. Frank has already had the machine riding in excess of 125 miles per and feels that he can still punch out a few more horses from the

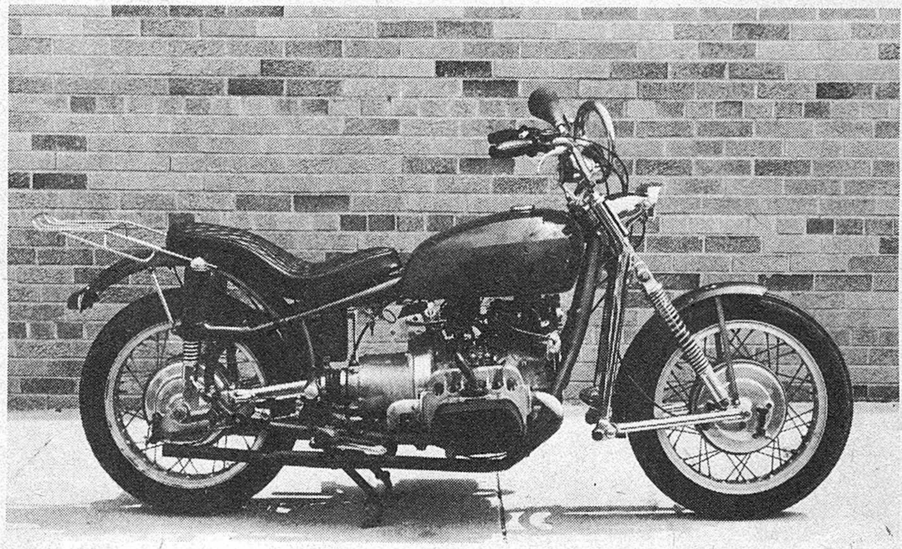
(Continued on page 68)



VW engine puts out 40 horses and measures 1200cc.

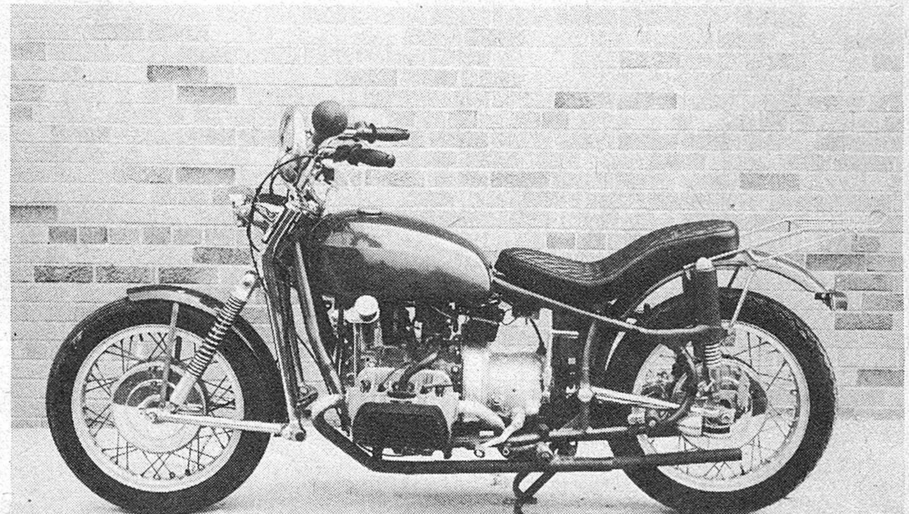


Oil cooler keeps temperature down.



The engine appears relatively inconspicuous in the large BMW frame.

Spring covers were removed.



Gas tank is a stock 450 Honda-type painted candy red to match the frame.

The mini Kawasaki is a maxi performer.

ROAD TEST

75 Kawasaki Dyna-Mite

The boss didn't believe us when we told him this little bomb was almost a real motorcycle. Now he's a believer

BY MARTYN L. SCHORR

"C'MON, OLDHAM, YOU GOTTA be kiddin'. Remember, I'm still the ED (Editorial Director) around here. You can't get away with that. When Gromer wants to test a bike you give him a real machine. The same goes for the rest of the crew. How come when I want to road test a machine you con me into a minibike? You wouldn't dare pull that on Dave Gooley or any of your other guys. Why me?"

That was my attitude when Oldham, editor of *Supercycle* and PERFORMANCE CYCLES and *unofficially* Master of the Caustic Comment, reacted to my request to get into the saddle for a test. He hit me with the 75cc Kawasaki Dyna-Mite. When he said Kawasaki I had visions of a Mach III or possibly a crack at their super secret not yet released 350 Three killer machine. No way! Would you believe—at my age—a minibike?

So I packed all 120-plus-pounds worth of mini—Kawasaki style—into the back of an outrageous Chrysler Town and Country wagon, thoughtfully supplied by local Chrysler PR office, and headed up to my off-road paradise in St. Remy, New York, for my indoctrination into the world of trail bike riding.

First off, the Kawasaki "Parnelli Jones" Dyna-Mite does not look like a minibike. And after spending a couple of weeks with it off the road, it unquestionably does not perform like a minibike. It's a mini-motorcycle in every sense of the word. Like all other machines in the Kawasaki line for '71, it too features a sano styled tank and head turning candy green paint (theme designed by SoCal custom painter, Molly). Its fiberglass fenders are neatly clipped and offer enough clearance for as much suspension movement as is possible.

But styling doesn't make a mini a maxi-machine. It takes an engine and a chassis and suspension that work. The Kawasaki 75MT has a motor that makes it. All we had to do was twist the smooth throttle just a little too much and we were pulling wheelies on non-traction surfaces. The mill's a honker.

It actually displaces 73cc and, like all other Kawasaki machines, makes use of automatic Superlube injection system for oiling the 2-stroke mill. It's simple and takes the worry out of lubrication chores. Thanks to a 16mm Mikuni with a trick choke lever, starting for the most part was a one crank deal. Only when the bike was really hot after pulling through the boonies in first gear all afternoon, did starting become a multi-crank affair.

We liked its feel and we liked its power. There's a solid 5 hp at 6300 rpm tucked under the rails and it *does* crank on. With yours truly aboard weighing in at 185 pounds, it went a solid 35 mph. With a lighter rider, we clocked a legit 39 mph, just one mph shy of the factory claim.

The exhaust pipe is tucked high out of the way and it features a built-in spark arrestor making it ideal for the kind of abuse a mini freak would put it through.

Shifting the 75MT is more like a mini than a motorcycle, but that's good. It's no fun playing with a clutch when you're pushing through the rough stuff. The clutch is a centrifugal-type automatic unit and the transmission is a positive shifting cycle-like 3-speed. Neutral is on top and the gears are all down from there. Shifting with my size 12 boots presented no problems. Under load, we did note some slippage when in second and third gears, the throttle in full tilt position and the road surface graded uphill. Nothing to really worry about but it was noticeable. Not once did we have any problem going up or down through the gears. For the record, first gear works out at 24.75 to 1, second at 13.01 to 1 and third, 8.92 to 1. When pulling some grades, we felt as though the machine could have handled a larger sprocket.

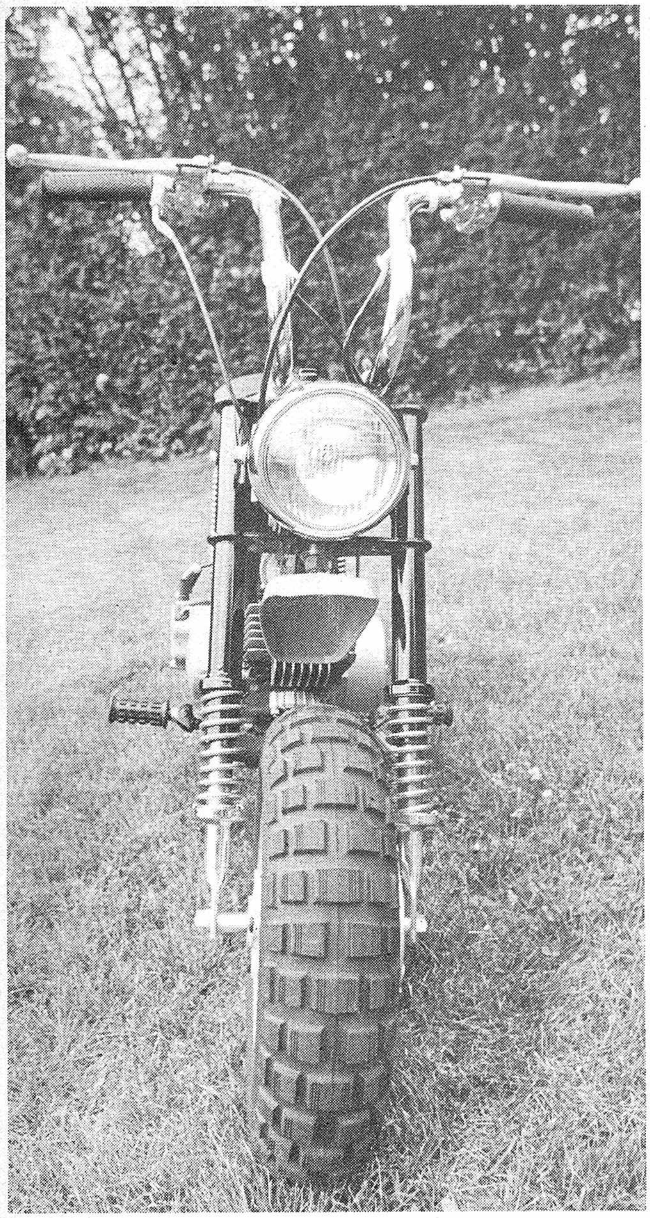
Feel is also an important feature and the 75MT scores heavily in that department. The chassis is a beefy backbone design and there's a good ½-foot clearance. The single exhaust pipe is well tucked under the seat, keeping the design clean for off-road applications.

Every once in a while, we were hassled by the oil pump housing which sticks out the right side of the engine. It's right next to the peg—folding type, of course.

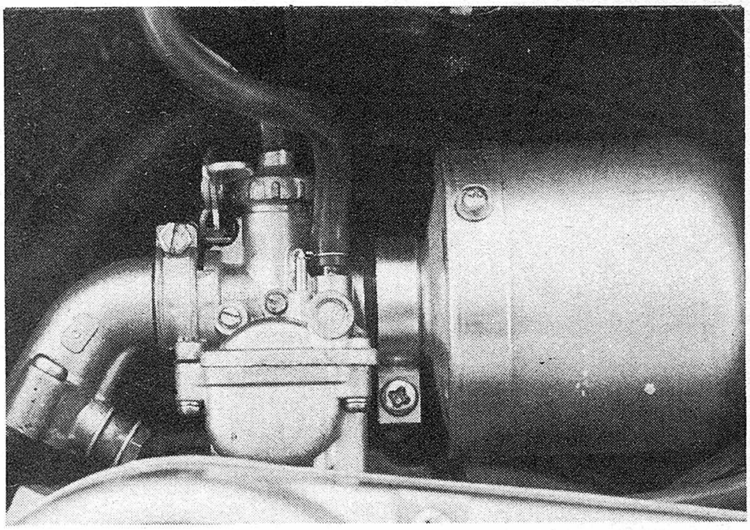
The saddle's comfortable and the controls feel very much at home in the hands of anyone who is used to riding a big machine. There are light control switches and a magneto (no battery) kill button all conveniently located on the handlebars. The handlebars themselves are worthy of note. Most off-roaders don't dig folding handlebars for obvious reasons. Like, they don't stand up under competition abuse. However, the folding handlebars used on the 75MT are strong—very, very strong. And with them, it makes car trunk loading possible, providing there are two guys around to do the lifting.

As the 75MT is fair, it's not the ultimate vehicle for doin' it in the dirt. The tires supplied are 3.50 x 8 Bridgestones, a compromise tire for paved and non-paved surfaces. It's a dynamite tire for paved roads, but the bike isn't licensable for street use. Traction is unreal on black top or concrete surfaces. But dirt stuff is something else. We made one try and gave up, spending all our time making it through the boonies where it really excells.

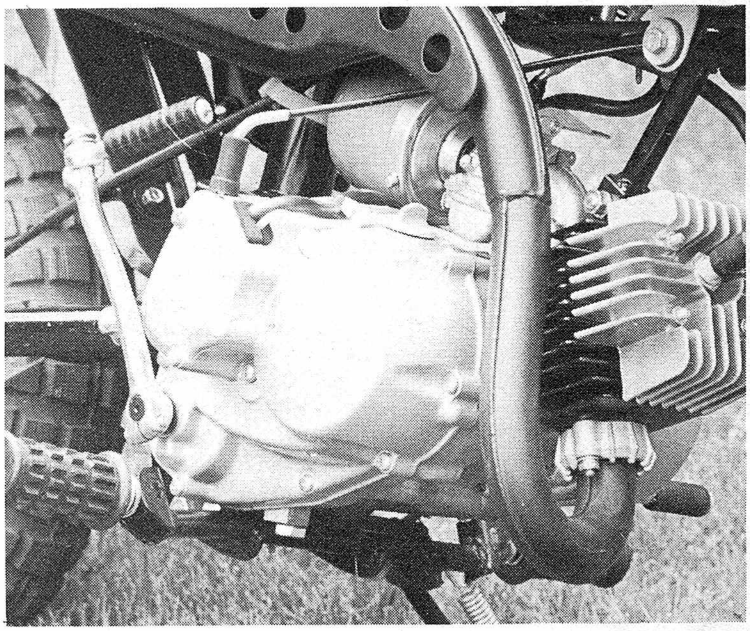
In fact, we had a rough time trying to get the bike back from local St. Remy "hot shoe" rider, Ed Goldberg, who immediately fell in love with the machine. The only fault he found with the Dyna-Mite, in addition to the suspension being too firm for his taste, was that the lever for the rear brake broke off in his hand while negotiating a gigonda hill. Since one other magazine tester had the same problem, it looks like Kawasaki has a casting problem somewhere along the way. We checked



Tires, 3.50x8, are compromise for paved and non-paved surfaces.



Carb is a 16mm Mikuni, with a trick choke lever for easy starts.



Mighty mini engine puts out 5 hp at 6300 rpm.

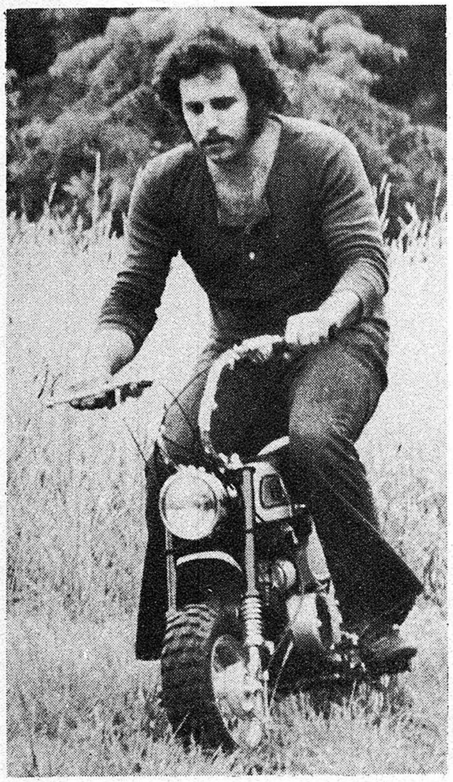
with other testers and they've never had a problem like this with any Kawasaki machine—mini or maxi.

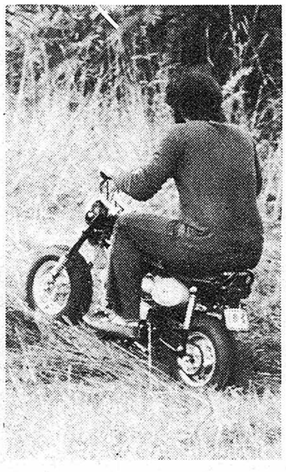
Unlike the common garden variety rigid frame minis, the 75MT sports telescopic front suspension and swinging arm rear suspension. It sounds great and should work great. But we found it very stiff on normal surfaces and quite rough on the hills. At no time do you ever have any doubt about the surface you're riding on. The suspension gets the message right to you. It's not as rough as a rigid frame setup but it's quite a bit stiffer than we had expected after reading the factory sales brochure and eyeballing the suspension. However, once you master the machine, it's a ball to ride.

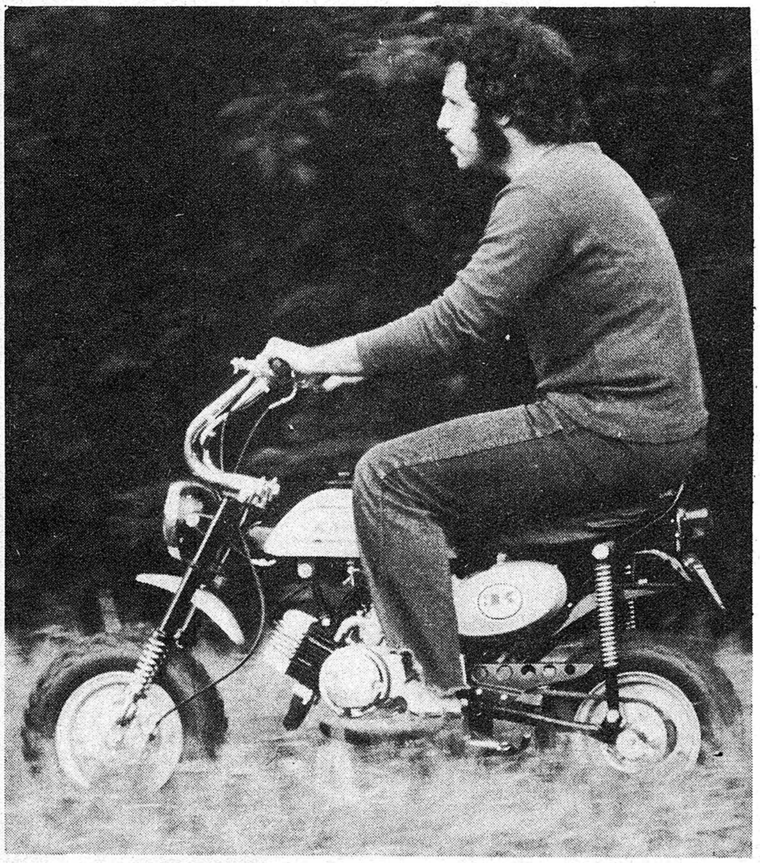
In addition to going like a cycle, it also stops like one—providing the lever doesn't break. Internal expanding shoes front and rear controlled from the handlebars stop it right on. Adjustments are made via stars under levers. However, we found very little use for the brakes in general, making maximum use of engine breaking in low gear for most stopping applications.

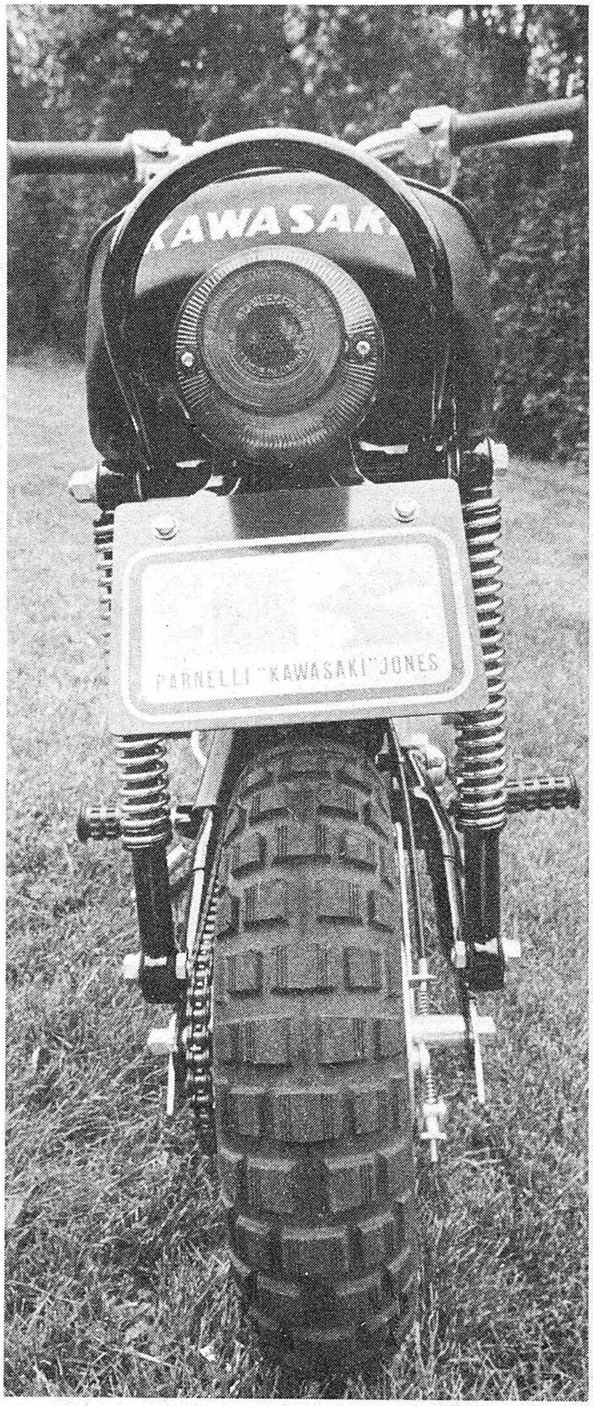
After bringing the machine back in one piece—except for the brake lever—Oldham promised me a crack at the 100cc Bushmaster he's been playing with. "Then it won't be long before you make it to the top and we let you play with a biggie," remarked the chubby caustic one.

Somehow I thought *I* was boss around here.


Bike really excells in the boonies.

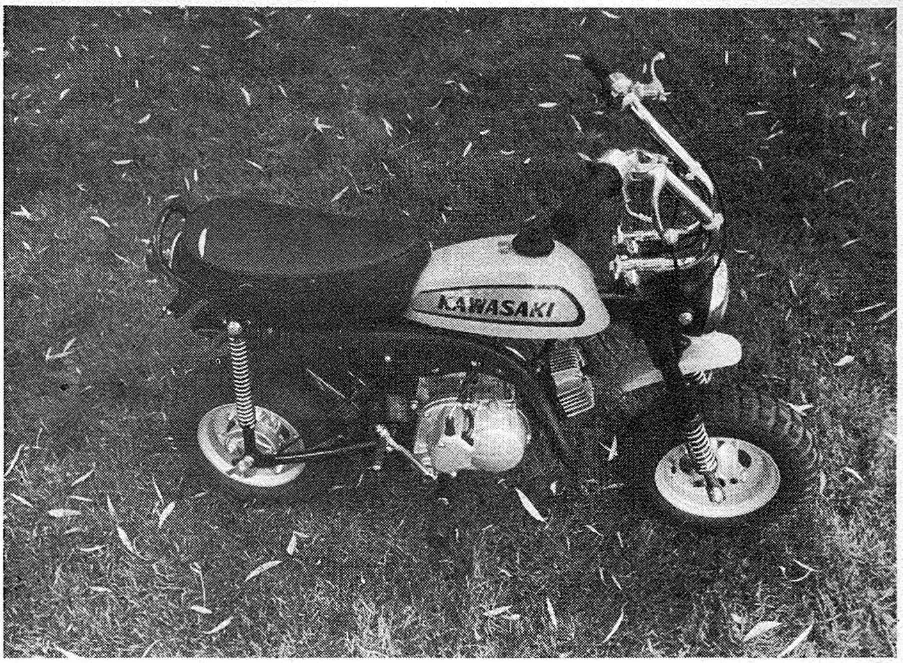

Road testers found suspension too firm.


The 75 MT mini sports a telescopic front suspension and swinging arm rear.

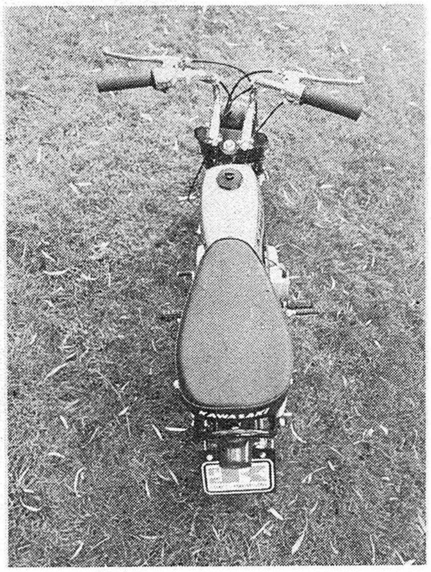


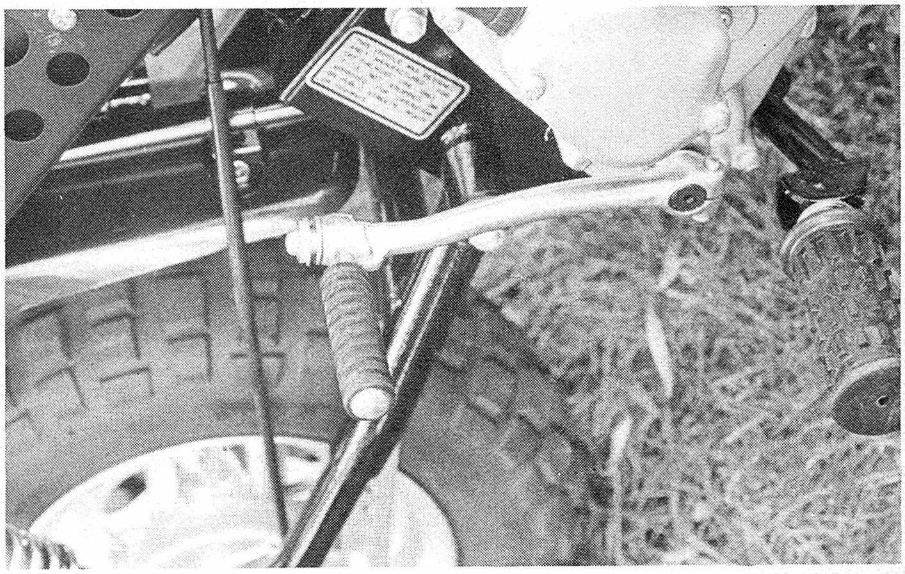
The plate in the rear says it all.

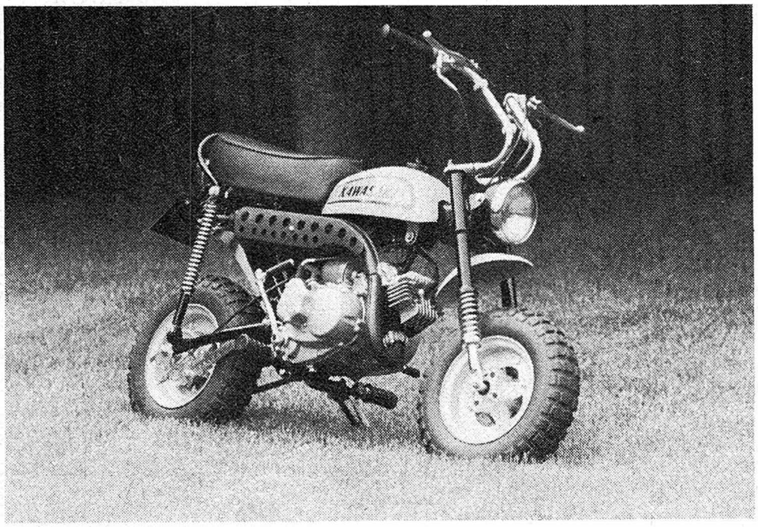
Fender is well out of the way of trouble.



The Kawasaki looks tougher than the normal mini—and it is!







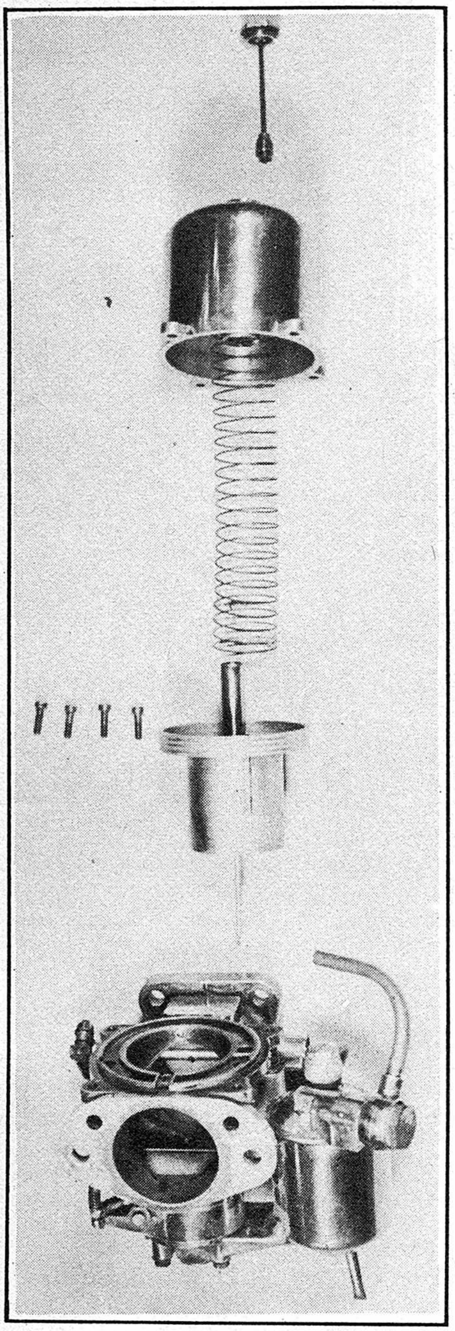
75 KAWASAKI DYNA-MITE

Base price	$307
Engine type	2-stroke single
Bore and stroke	46 x 43.9mm
Displacement	73cc
Compression ratio	6.7 to 1
Horsepower	5 at 6300 rpm
Carburetion	One 16mm Mikuni
Transmission	3-speed
Clutch	Centrifugal, wet plate
Primary drive	Helical gears
Final drive	Single-row chain
Brakes	Drum
Tire size, front/rear	3.50 x 8/3.50 x 8
Lubrication	Oil injection
Fuel capacity	0.8 gallons
Dry weight	121 pounds
Wheelbase	39 inches
0 to 60 mph	NA
Stand. start, ¼-mile	NA
Top speed	39 mph

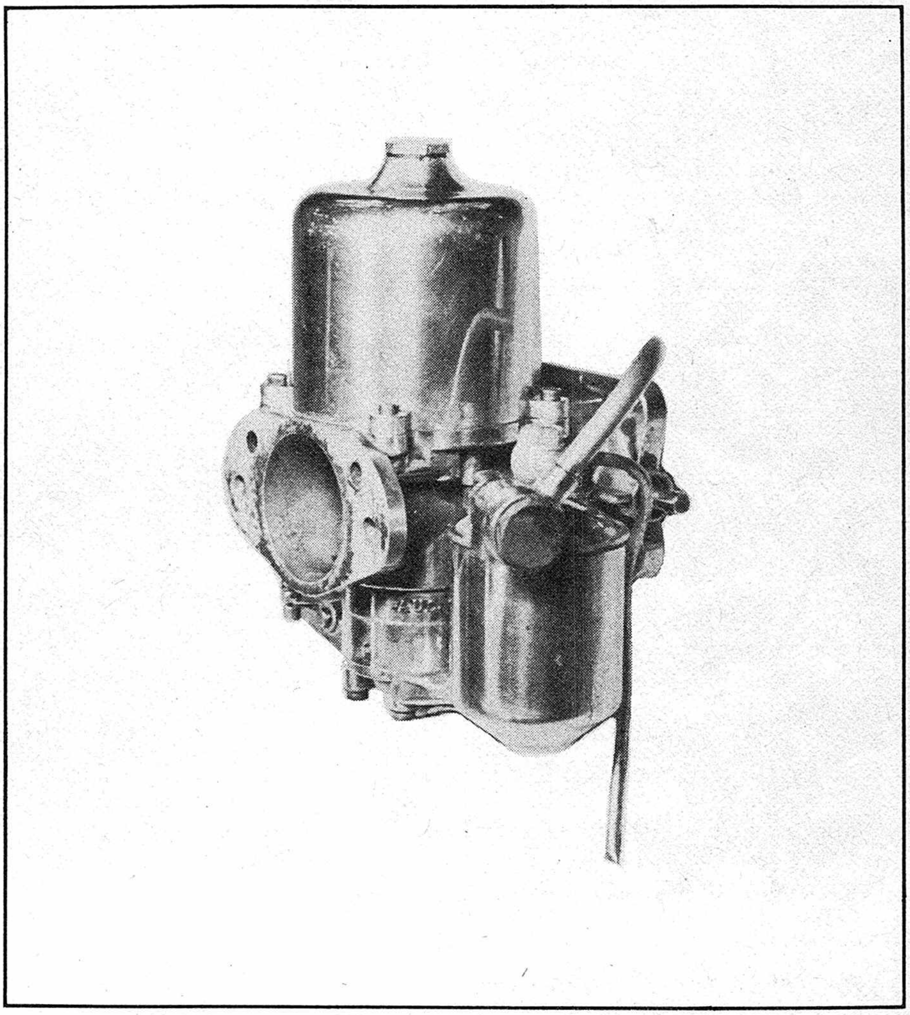
MORE PUNCH FOR THE KNUCKLE

Harley's old knucklehead takes on new life with the addition of an SU carburetor

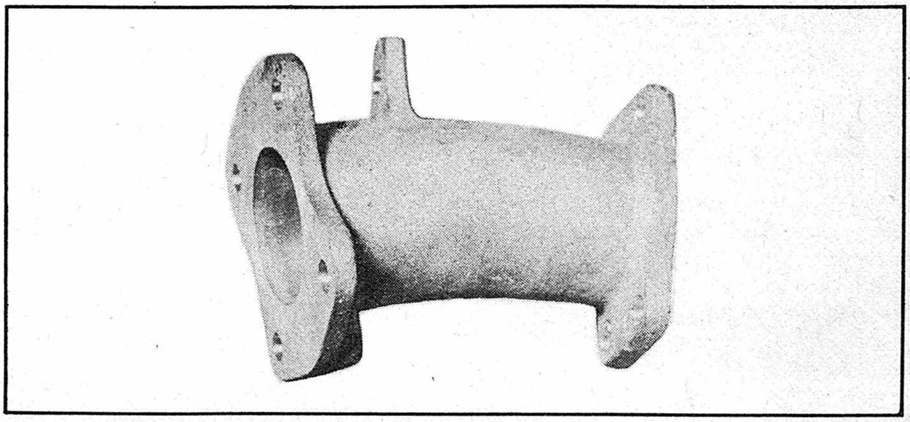
BY CARL CAIATI



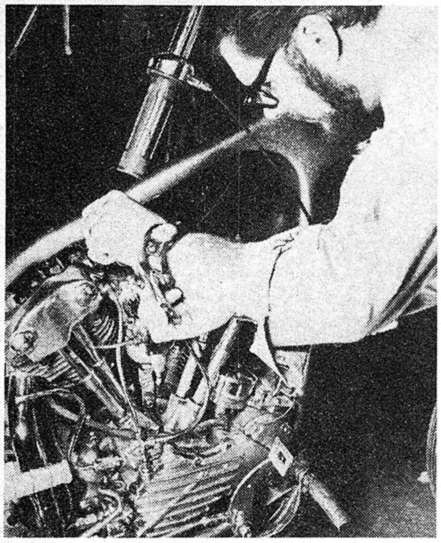
Component parts of the SU carb.



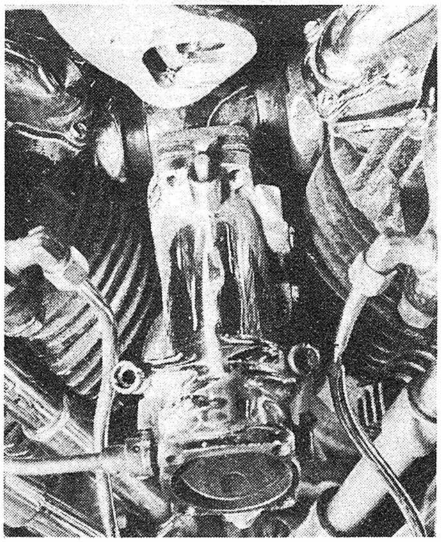
The SU carb is stock issue on Jaguars, Austins, Triumphs, MGs and Volvos.



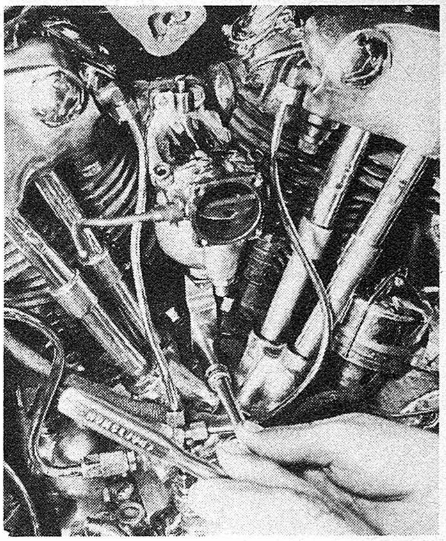
This is the SU conversion manifold for Knucklehead engines.



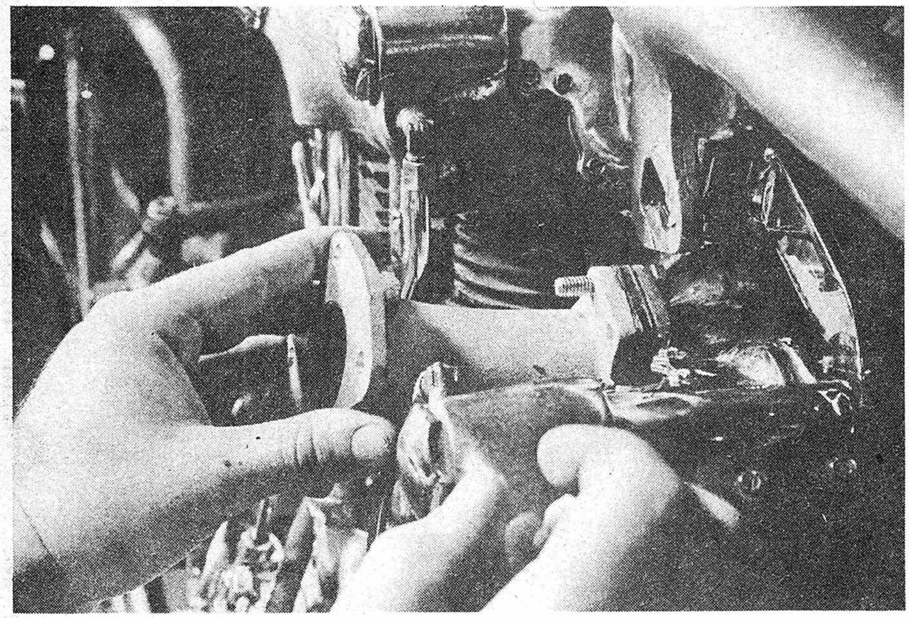
1. **Remove the tank, allowing more access to the heads.**



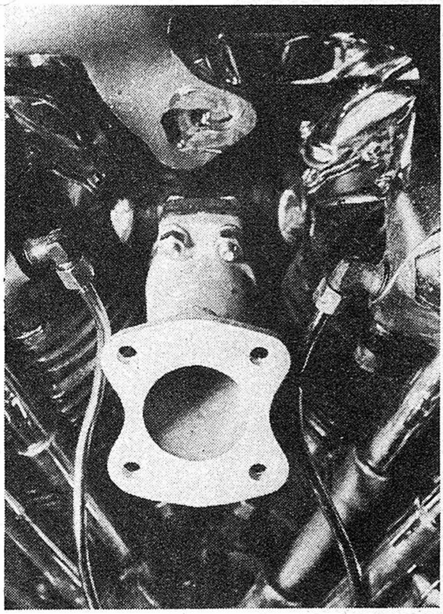
2. **Remove four retaining screws of original carb, releasing it from intake manifold.**



3. **Remove the lower carb support bracket if one is present.**



6. **Attach the new conversion manifold using four nuts and bolts.**



7. **Tighten the assembly and make sure the oil feeder lines are out of the way.**

OLD HARLEY ENGINES NEVER die. They just hang in there and get stronger. A classic example is the vintage knucklehead engine still popular and coveted by knuckle *aficionados* who still run them and knowledgeable bike buffs who chance to pick them up in good used condition. The old knucklehead was a worthy contender in its day and still prime rebuilding meat for vintage Harley buffs today.

The carburetor that was originally issued on the knuckle was the Linkert, considered to be one of the finest carbs ever made—rare today due to the fact that they are no longer in production.

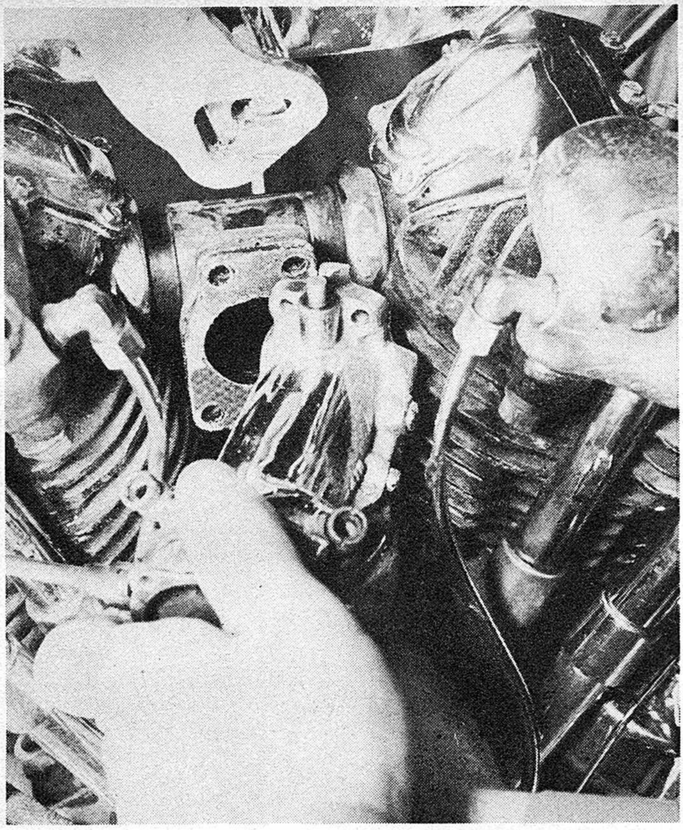
Realizing the need for a workable substitute carburetor to replace the now virtually extinct Linkert, Custom Cycle Engineering of California designed and now markets a manifold adapting the increasingly popular and easier to come by SU carburetor to knuckleheads, contemporary 74s and Sportsters.

The SU carburetor has long been a potential candidate for knuckleheads and other Harley mills as a compensation for the weak performance gaps inherent in the more modern Tillotson and Bendix units. The SU is definitely the most logical answer for performance minded Harley buffs.

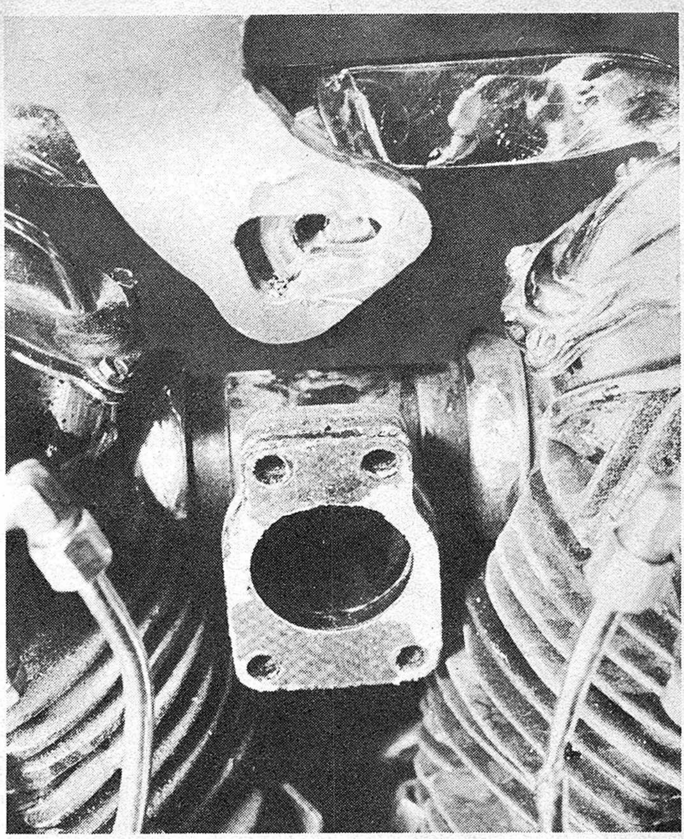
The SU carburetor goes back a few years and was at one time the forerunner of all the vacuum-type carbs on the market today. It is basically an automotive carburetor—stock issue on Jaguars, Austins, Triumphs, MGs and Volvos. It is available in 1¼-inch to 2-inch throat diameters. The model tailormade and readily applicable to the knucklehead mill is the 1½-inch throat version.

Though two manifold adapter units are produced by Custom Cycle Engineering, the one specifically designed with the knucklehead in mind is the longer model, number 1251. This adapter is sturdily constructed, cast in aluminum, making mounting secure and foolproof. Though SU carburetors may be purchased from well stocked dealers featuring the aforementioned brands of cars, they are reasonably plentiful from junkyard dealers. New, they retail in the $75 to $100 range. Used, they are moderately priced, ranging from $6 to $25 depending on condition, age and model.

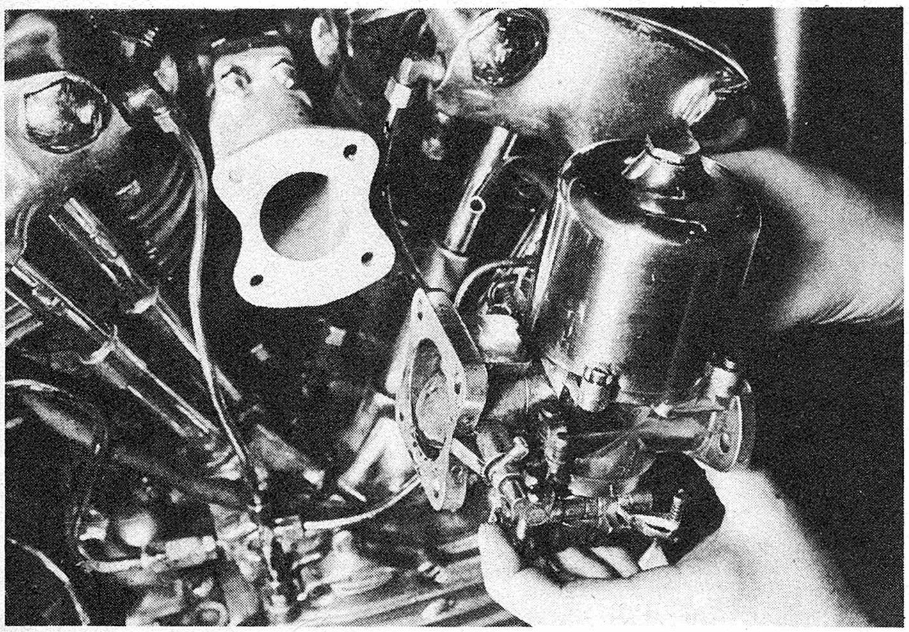
The SU is a constant velocity, vacuum-type carburetor incorporating a variable venturi. The throat slide connected to the fuel metering needle is vacuum controlled, automatically adjusting fuel flow and ingestion according to the requirements of the engine. Volumetric gas intake is automatically controlled by means of the vaccum diaphragm. Throttle response is immediate



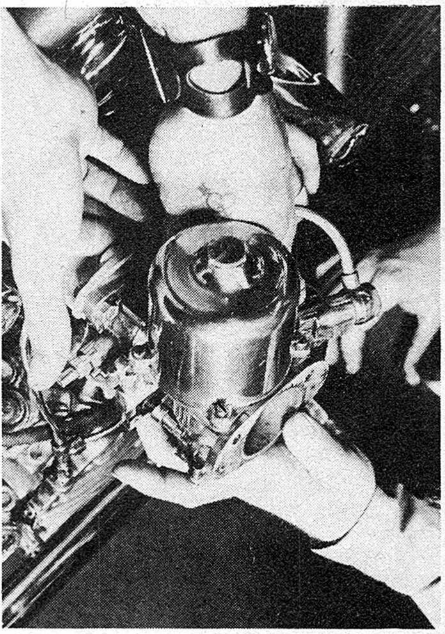
4. Remove the carb and detach throttle linkage.



5. If gasket is badly worn, use a new one.



8. Now take the matching side (with 4 holes) of the SU and place against manifold adapter.



9. Having positioned the new carb, secure it into place again using four more bolts.

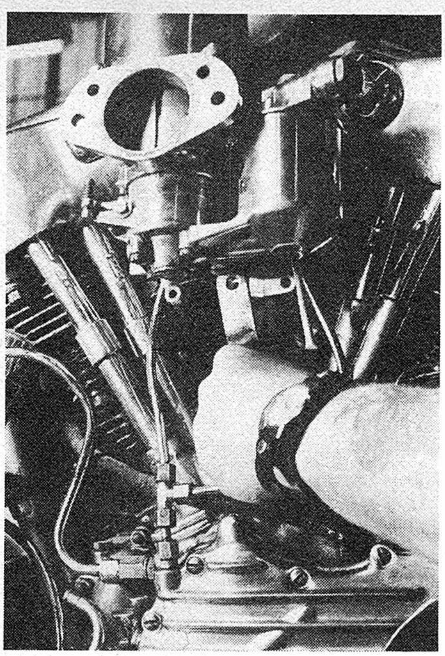
with no annoying lagging. You can whip the throttle full on, yet the engine will take on fuel only as fast as it can utilize it. Acceleration is even and precise.

Installing the SU is a simple matter, even for the neophyte. All one need do is remove the old carburetor, attach the manifold adapter to the carb, then secure the whole assembly to the engine head. According to choice the SU throttle linkage may be employed or the Harley throttle lever can be drilled out. A support bracket to further secure the SU may be installed if you feel it is necessary.

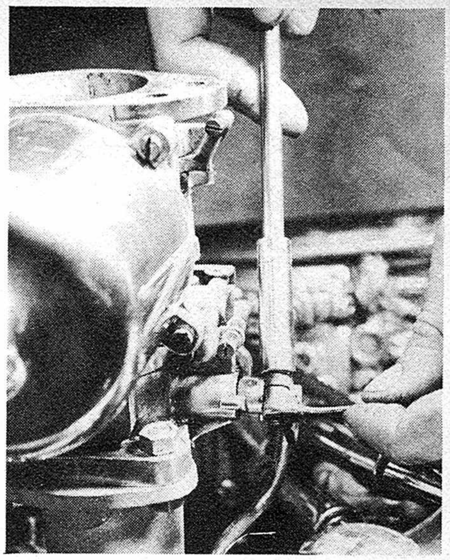
The installation procedure illustrated was undertaken by Mike Lasky of the Chopper Factory in Weymouth, Mass., who has handled many such conversions at the shop.

Though accessory jets are available if needed, usually manipulation and resetting of the stock needle will suffice to make the SU workable. Raising the needle enriches the mixture. Lowering it leans out the mixture. Adjustments are made in minute increments. There is some maintenance needed to keep the SU functioning properly. Since the slide vacuum diaphragm is oil damped, an inner cup retaining the transmission fluid needed for damping must be kept constantly filled.

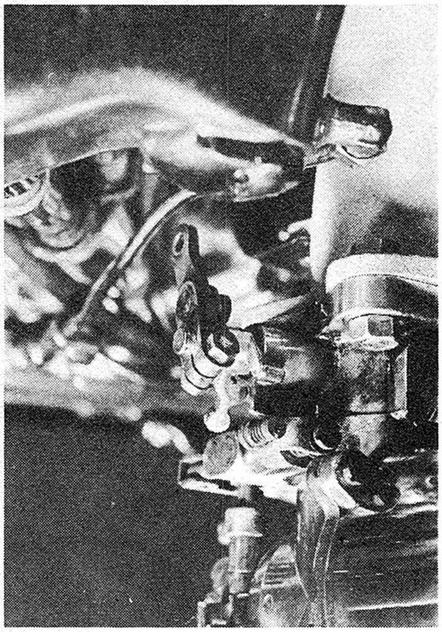
It has been proven that with the addition of the SU carburetor, an eight to ten horsepower increase can be immediately recognized. Try it and you will undoubtedly be pleased with the noticeable gain in engine performance.



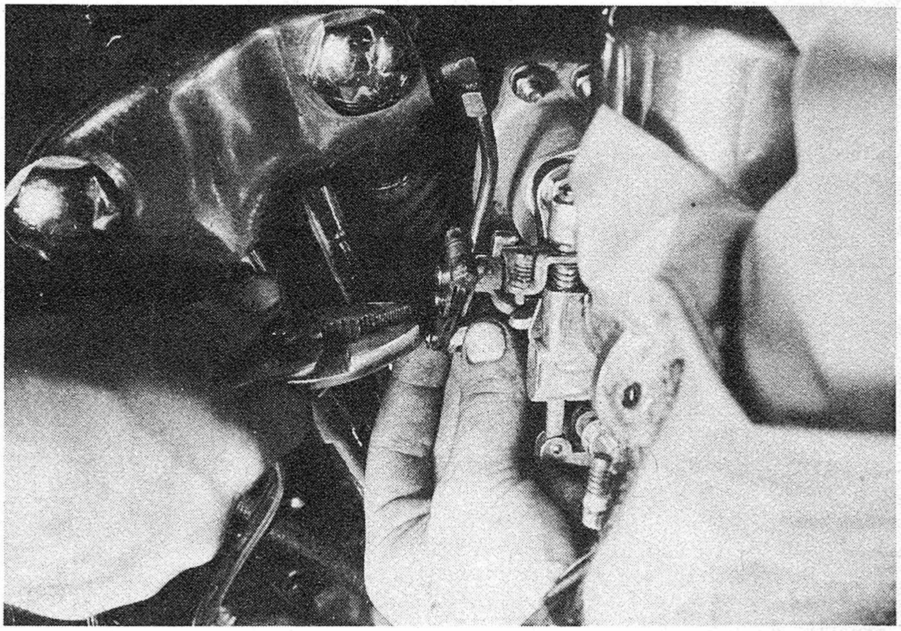
10. Fashion a security bracket to firm up installation. SU is bulky and heavy and must be firmly attached or you will have problems. One eighth steel strap is good material from which to fabricate a security bracket. One end is affixed to the lower part of the carb; the other to a drilled-tapped hole in the engine case.



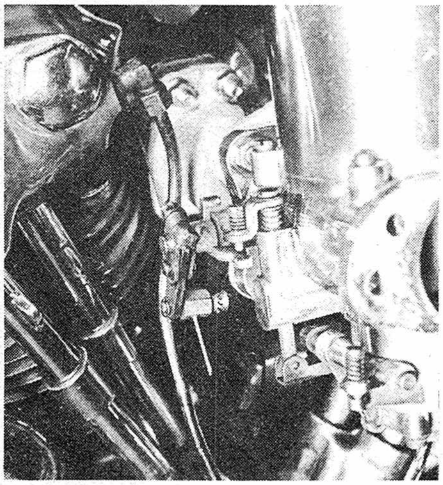
11. Attach either the Harley cable linkage or adapt the SU standard stock one.



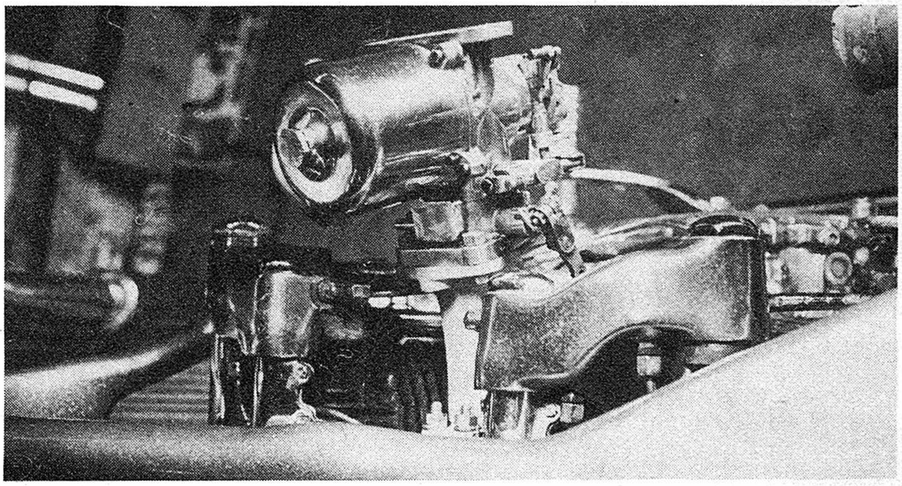
12. The linkage is now secured.



13. Add a cable securing nipple to the arm of the linkage.



14. Thread cable through nipple, adjust, cut off excess and you're ready to start.



15. The SU may protrude a bit more than the standard carb, but it's impressive in its mass.

BSA PROJECT

(continued from page 50)

the BSA engine has long been known as one of the most reliable around.

To make it competitive, the first thing that must be done to any stock street and trail bike is to remove the lights. Just about every manufacturer producing this type bike uses the adverbs "easily" or "quickly" when describing how the lights are removed. This is seldom the case though. We were pleasantly surprised to find that the headlight on the BSA *was* easily and quickly detachable.

The headlight is secured by two bolts on each of the fork yokes. Removing these bolts will allow the headlight to hang down, held by the wiring harness. So if you're planning on saving the light to sell or put on another bike, it is best to wrap it in a towel to keep it from being damaged while you are removing the wires.

One of the best features of the BSA is that its electrical system has a number of plug-together connections. At the front of the machine directly beneath the gas tank is a small alloy box which contains the coil, condenser and ignition lock. It also contains a 9-junction plug. To remove the headlight wiring harness, you simply pull this large plug out.

The taillight is not easy to remove. It is mounted to the fender by three bolts, which are accessible only from beneath the fender. When the bolts are out, you need only to pull the wires from a plug which is located just behind the right shock absorber mount, to free the taillight from the bike.

We suggest that only the wires for the head and taillight be removed. Stripping off the complete wiring harness will result in only a small advantage. And trying to reconstruct a new electrical system will be a major hassle.

Once the lights were off, our next order of business was to try to make the bike lighter. We began by removing the rear fender brace. This unit weighs about 2½ pounds and looks like it is part of the frame. It can easily be removed by taking the nuts off the top mounting bolts of the rear shock absorbers and removing the two small bolts which hold the brace to the fender.

With the lights and fender brace off, you begin to see how really massive the rear fender is. We decided to chop our fender in order to cut the weight down and improve the bike's esthetics. The fender is mounted to the frame by five small nuts and bolts, two of which are accessible without removing the seat.

The seat is mounted by a slide-on fastener in the front and two bolts in the back. To remove it you simply take off the two bolts which are mounted just in front of the rear shock mount, pull the seat up and pull back.

The fender, like everything else on the BSA, is very sturdy. Perhaps a better description of the fender would be armor-plated. We cut a section from the fender measuring 20 inches from the rearmost point. We then remounted the fender section so that it ended about five inches behind the original rear mounting tabs. This meant that the battery and air cleaner were exposed to the open tire, whereas before there had been a section of the fender protection them from mud, stones, etc.

In order to keep the air cleaner and battery in good condition, we mounted a strip of plastic about five inches wide where the front section of the fender had previously been.

The plastic strip we were just talking about and the number plates were both made from a plastic wastepaper basket. The Rubbermaid people may not know it, but they build some of the best motorcycle accessories around. We used an 18 x 8-inch square edged basket costing about $3. These generally come in many colors and can be easily cut with a pair of scissors. We suggest that you stay with Rubbermaid brand. But if this is not possible, make sure the basket you buy is soft plastic and not brittle. The brittle ones will break from the vibration after a few hours of riding.

To mount the number plates, we used small metal locking strips of the type used by BSA to hold the wiring harness on. These are perfect for mounting plastic number plates as they allow you to remove the number plates easily. However, if you can't find a hardware store which sells locking strips, wire or wax-coated shoe strings will work as well.

Making the actual numbers has long been a problem for motorcycle racers who cannot afford to pay the price of having them hand-painted. We make ours out of contact paper. Contact paper is an adhesivebacked, waterproof paper which comes in many colors and costs about 50¢ a square yard. Make a stencil out of an old shirt cardboard, then trace the outline onto the contact paper, cut it out, pull off the adhesive and push it onto the number plates. You should be able to find contact paper in the household section of your local department store as it is commonly used for resurfacing shelves, tabletops, etc.

The bike was beginning to look like a racer and we were anxious to take it for a ride. When we put the seat back on, though, we were really brought down. It was entirely out of proportion to the rest of the bike and made the whole machine look funny. So we decided to shorten it.

About one third of the back of the seat was cut off. We cut it in a gentle arc, using a hacksaw. This is extremely difficult to do and it may be wiser to cut the section straight off or in small angles. The foam padding for the seat also has to be cut. We cut ours two inches longer than the seat length. Remember, the foam will compress as the cover is pulled down around it and it's better to have too much foam than too little. We suggest that you take the entire seat to a tailor to resew—unless you have an extremely talented wife, girlfriend, sister or mother.

With the seat mounted, we were ready to give the machine a hard test ride. During this testing session, several facts became painfully evident. First, the footpegs are very, very slippery when wet. Second, the rear end of the machine does some very stimulating carrying on when you land from a fast downhill jump. And third, you should never ride a machine all-out until you have removed the passenger footpegs.

We corrected these faults by taping over the front footpegs with friction tape. Then we removed the passenger pegs. And we partially solved the handling difficulty by setting the shocks in the stiffest position.

Our test track is located in a large vacant field behind a school. It runs about a half a mile in length and encompasses varied terrain. We have

(continued on page 68)

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BSA PROJECT

(continued from page 67)

smooth corners, bumpy corners, sandy corners, several steep hills and a steep, fast downhill jump. And the downhill jump was the only place we experienced any handling difficulty whatsoever. In all other situations, the BSA handled very well.

It was raining the whole time we were working on the bike. In fact it began raining the day after we got the bike and didn't stop for almost a week and a half. The bumpy straights on our test track had become a series of small lakes and here we discovered that the BSA's electrical system is waterproof.

We will remove the skidpan and muffler for competition. However, for running our test track we re-install them. The skidpan offers valuable protection in case we should run off the course and into the wild. The muffler also offers valuable protection. But it's protection is against the people who live in close proximity to our test track. We suggest that unless you are really away from civilization, you practice with the muffler in place. Less sound, more ground.

After test running the bike extremely hard for several hours, we were satisfied that the machine was basically sound. And we returned to the garage to complete the detail preparation.

Detail preparation is just what it sounds like—making sure everything is right. We always begin by boiling the chain in oil to insure that it is properly lubricated. You may have noticed from the photos that the chain guard has remained on the bike. This is not an oversight. On this bike the chainguard is also a chainguide, which means that the chain will not jump off unless it gets very loose. Then we checked the tension of the chain. We prefer to have about two inches while the machine is unweighted. Your owner's manual gives specific instructions on how tight the chain should be. But remember this. It is better to have the chain too loose than too tight. So don't overdue it.

Next we hit the cables. We liberally lubricated each cable. Then, after making sure they were all adjusted properly, we taped them to the lever mounts in an effort to keep dirt and water off the most vulnerable spot on the cable. After this, we made sure that all cables were routed properly in order to avoid being kinked when the forks are turned.

Then came the hard part. We went over the entire machine tightening each bolt, insuring that none would come loose by using Locktite or safety wiring. This takes hours to do but it is well worth the time, because if there is one rule about a motocross bike it is, *anything that can come loose will come loose.*

We tuned the engine slightly by setting the points and valves according to the owner's manual and checked the spark plug. Then we loaded the bike to take to the races.

With a grand total of under $8 spent, the machine is ready to go.

HARLEY SWEEPER

(continued from page 47)

tory racing team happened by as the bike was being set up for its maiden voyage and he was given the honor of the first ride. Mike wheeled the beast into the street, fired it up and made some final adjustments. The rear brake hadn't been hooked up yet, so Roger had to cool it some in traffic.

Ninety horses in a 350 pound bike makes for a wild wheelie machine and a goose of juice lifts the front wheel to any desired elevation. Rog strapped on his helment, got the feel of the controls and roared off down the street, pulsing power pounding from the straight-through exhausts. He came back all smiles. The bike goes and handles. A street racer's dream. A $5500 package of goodies.

If the bike is supposed to be a sleeper, it certainly doesn't come off as one. It looks hairy. Even with the stock H-D paint, it's hairy. Not many people are going to get suckered into thinking that this is just another Harley to step out on. If anything, it'll be Marty Altholtz that'll be doing the stepping from now on.

TOM BAILEY

(continued from page 8)

he could do. He was committed to the line he'd set up a few seconds before.

He drifted closer and closer to the wall. The side of the fairing had about a tenth of an inch clearance. Any closer and the bike would've hit the wall and deposited him on the ground. Just like it had when he'd tried to ride his Duke through the corner at the limit.

A few tenths of a second later he was screaming down the straight, having taken the corner at the limit. He was satisfied too. Almost happy with the circumstances that had led to his decision to try the turn. There was no need to worry about dying. His life was fulfilled.

When he got home he poured himself a glass of orange juice and sat down in front of the TV. He wanted to see if TV news would "cover" the end of the world. And he laughed as he thought about it.

As the set warmed up, he saw the picture of Walter Cronkite appear. Then he listened as Cronkite said, "Good afternoon. Millions of Americans took shelter today when a meteorite was mistakenly identified as a nuclear missile heading for the United States. Doctors in New York City reported a record amount of heart attacks as people went into shock upon hearing . . . . "

MacNulty laughed hysterically. "Nuclear attack," he said to himself as he walked out to the garage. He knew he'd have to pack fast if he was going to make the race the next day.

CHAIN MAINTENANCE

(continued from page 22)

the sprocket. Being too tight also causes wear and sometimes leads to the chain ripping itself apart. In the event that your chain does come apart, it is smart to carry a chain repair kit. A well-equipped chain kit should contain two master links, a roller link, a half link, a link and a half and a small chain breaker. This should be sufficient to cover nearly any emergency.

A clean and properly adjusted chain will require little additional maintenance until the time rolls around to clean and relubricate again. It would be wise to add chain lubrication and adjustment to your bike's periodic check list.

Now you are ready to hit the freeway, the long dusty road, the mountain trails or to race flat out over unfamiliar desert terrain confident that your chain will not come flying through the engine case and up your leg.

BMW-VW

(continued from page 58)

mill with overboring and hot camming. As it stands now, the machine is reliably ridden daily. And as far as Frank is concerned, it's the most street machine he has ever ridden. And then some.

GOODIES SHOP

Manufacturers: If you have a new product that would be of interest to the motorcycle enthusiast, send complete information plus black and white glossy photos to New Product Editor, PERFORMANCE CYCLES, 1560 Broadway, New York, N.Y. 10036. We'll show it here free.

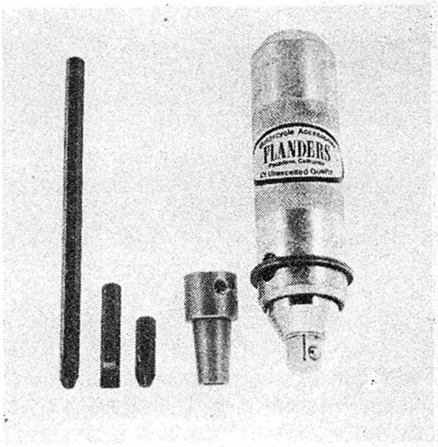
All information and claims for products in this section are from the manufacturer. This magazine does not endorse or verify any product or claim stated in this section.

GOGGLES

A new all-purpose sports goggle is now available from Bausch & Lomb of Rochester, New York. Called Wind Goggle, the new glass features a special wide-angle lens made of General Electric's Lexan plastic which is virtually unbreakable and was originally developed for the astronauts' moon-walk helmets. Other outstanding properties of the new goggle include the exceptionally good optical quality of its lens; a sturdy but pliable plastic frame with face-conforming inside-rim cushioning, plus flow-through ventilation to prevent fogging; and a red, white and blue striped adjustable headband. The basic Wind Goggle unit, at $12, comes equipped with a clear lens. But optional lenses in dark gray for glare protection and in yellow for brightening and contrast in dark weather will be offered at $5 each. Lenses thus may be interchanged—an easy procedure—for different sports and for quick adaptation to changing light conditions.

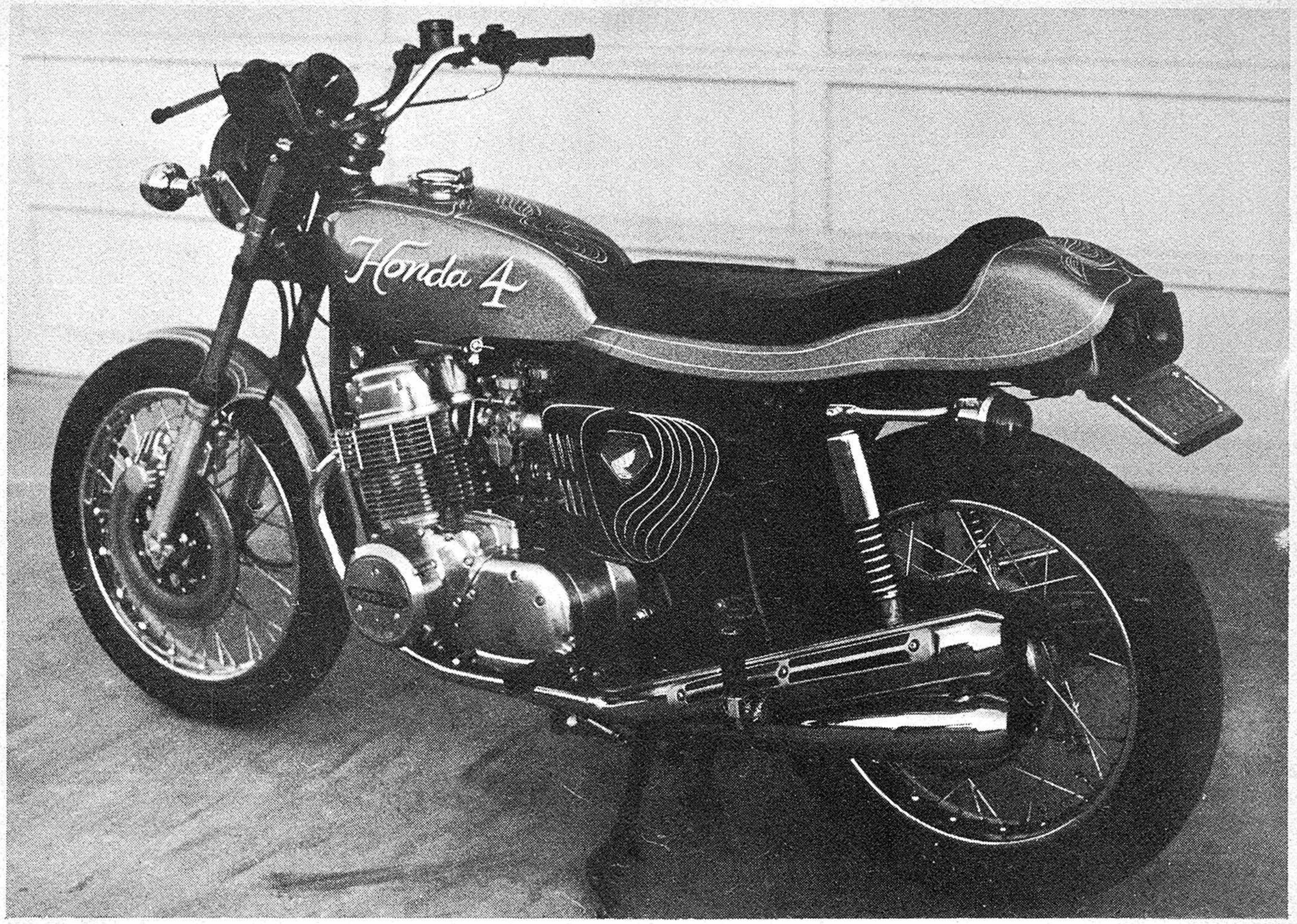
HAMMER PAK

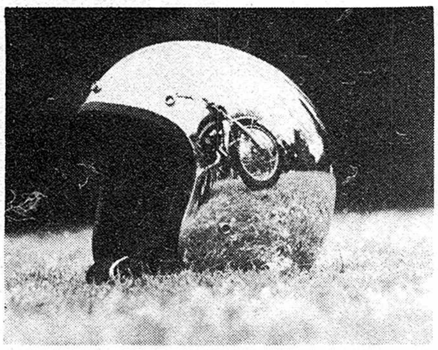
Flanders Co. announces a Hammer Pak designed for the motorcyclist. This unit includes as standard equipment a 5-inch long Phillips #3 bit. This the bit most often needed to split the cases on Japanese 2-strokes. Also included in this kit are a flat tip slotted bit and a short Phillips #3. The hammer drive and bits are made in the USA and are aircraft quality. The suggested retail of the complete kit is $10.99 plus tax. Extra bits are available from Flanders or your dealer. There are ten seperate bits and accessories available for this hammer drive which makes it just about the most flexible hammer drive on the market. The part number for the kit is 690K. *Flanders Co., Dept. MAG, P.O. Box 2297D, Pasadena, Calif. 91105.*



HONDA SEAT

This seat was designed to utilize the stock mounts and still give great comfort and styling for you and your passenger. It folds up as stock and uses the stock taillight and license plate and frame. It comes complete with a glove box under the seat for tools or glasses, etc. It is upholstered with black tank. Price—$59.95. Metalflake—$64.95. *The Fiberglass Works, 2600 Soquel Avenue, Santa Cruz, Calif. 95060.*



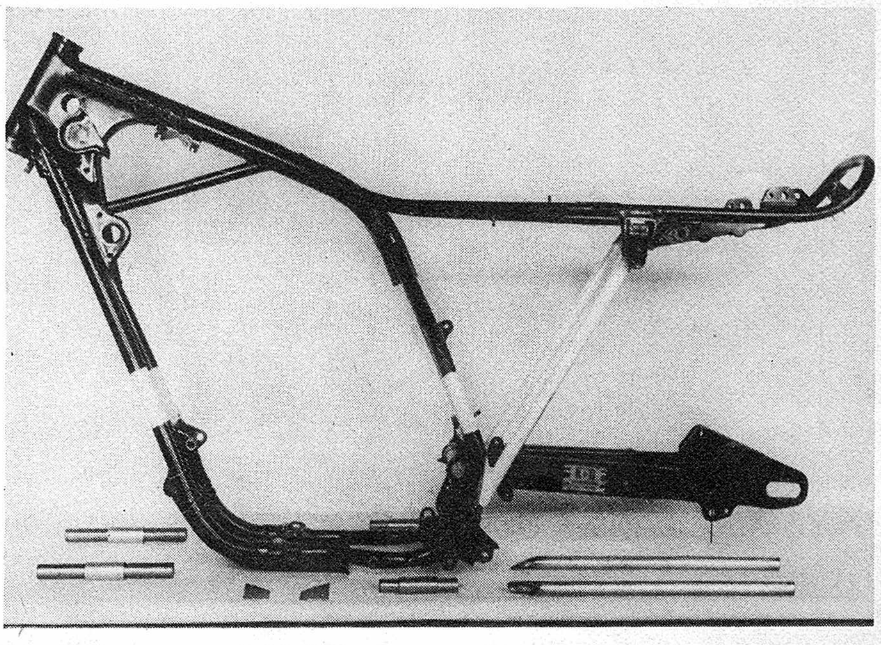


CHROME HELMET

This newest entry in the helmet race is a chrome helmet called the Ball Bearing. Chrome reflectivity over super-tough, thermo-plastic makes this one a real standout. The Ball Bearing exceeds Z90.1 code and is AMA Group 1 approved. *American Industrial Mfg. Inc., 15225 Texaco Street, Paramount, Calif. 90723.*

YAMAHA FRAMES

Japanese bikes, particularly Yamahas, are built with too little space between their wheels and too much space between the ground and the skidplate which causes all sorts of problems to desert and motocross riders. The motorcycle feels top-heavy in turns, like it wants to fall over. And in going over rough ground it likes to swap ends, much to the displeasure of the orbiting rider. But now that can be fixed and at relatively low cost by simply sending the stripped frame to K&G Engineering for an engine lowering, wheel spacing treatment. The frame is slided in two just above the swingarm. Then steel inserts are welded in place, effectively lowering the engine cradle and swingarm pivot with respect to the rest of the bike. Two new cross braces and several gussets are added to make the frame more rigid than the original. The spacing slugs are steel



and they are welded both at the outside joint and at the ends, ensuring that the new frame is stronger than the unmodified one. When finished, the engine is about two inches lower, the wheelbase has been stretched about an inch and the swing-arm is parallel to the ground under normal load. It is not necessary to make any changes to any of the other parts of the motorcycle as a result of the frame modification. Many of the country's faster Yamaha racers have already made this modification on their own, but this is the first time it has been offered non-experts. The cost is $49.95 for Yamaha DT-1s and RT-1s, slightly more or less for other bikes. Some models of Kawasaki and Suzuki can benefit from a similar treatment. *K&G Engineering, 2353 San Fernando Road, Los Angeles, Calif. 90065.*

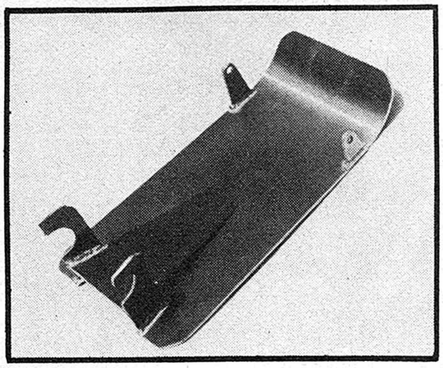
EVENT MARKERS

These new universal event markers were carefully designed to be versatile and almost impossible to miss. The two markers will fit almost any purpose. The large size—8½˝ x 11˝—with its bold black art on either dayglo orange or dayglo hot pink, is the best course marker you'll find short of a flagman. The smaller—3½˝ x 5½˝—size will save you money while still effectively marking parts of the course which are not confusing. Major turns and other confusing areas should be marked with the larger size.

If the competition area is hard to find, the spectators will appreciate a well-marked route. *Pabatco, Box 327 NA, Dept. R. Athena, Ore. 97813.*

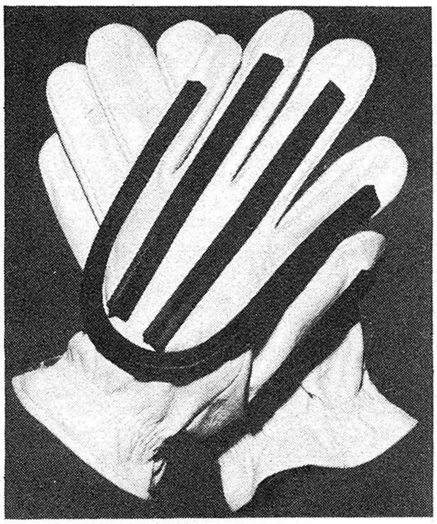
HONDA SKIDPLATE

This new alloy engine guard for the Honda SL-350 K1 is considered a necessity for off-road riding. It assures complete protection to the entire engine and cases. Made from 3/16-inch alloy plate, the new engine guard features heli-arc welding on all brackets and mounting tabs. The unit is easily installed without any modifications. The part number is 1657 and the skidplate sells for $19.95 at motorcycle dealers throughout the U.S. *Webco Inc., 218 Main St., Venice, Calif. 90293.*



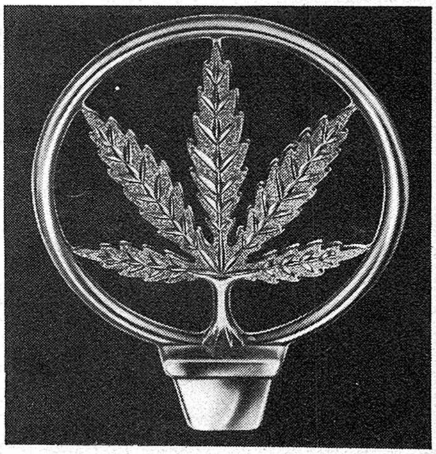
MOTOCROSS GLOVES

The motocross endurance rider now has available to him protective gloves which have been especially designed for durability and wear comfort for long periods of time. The new gloves are made of supple, "kidskin soft" cowhide with unlined chamois finished interior that assures long life and true comfort on the hands. The exterior of the gloves have nylon stitched, molded rubber strips embossed on the glove-back to protect hand, fingers and knuckles against branches, flying stones and other debris. The gloves are of heavy duty construction with seamless one-piece palm and elastic cuff for a snug secure fit. The new motocross gloves are available in a neutral color only in small, medium, large and extra large sizes. *Buco National Sales Office, 16055 Ventura Boulevard, Suite 1004, Encino, California 91316.*



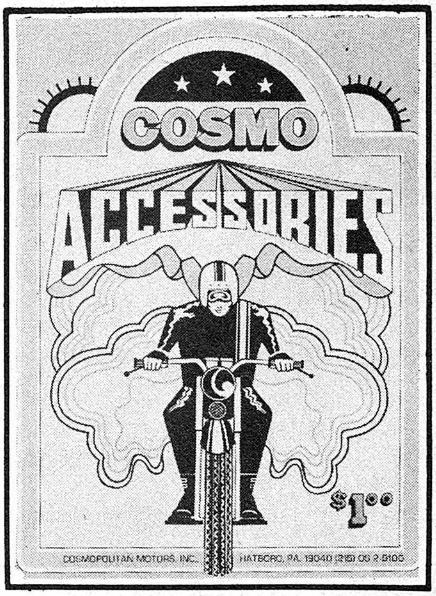
THE LEAF

It can't be smoked, but a tapped hole in the bottom of the flower pot allows easy mounting anywhere. Available in gold or chrome finish, The Leaf makes a unique sissy bar ornament, hood or fender flyer, highway peg extender or the like. A heavy, high-quality die casting, The Leaf is 3½-inches high. *The Bike Shop, 1470 Manheim Pike, Lancaster, Pa. 17601.* Price is $4.95 in either finish, plus 50¢ postage and handling costs.



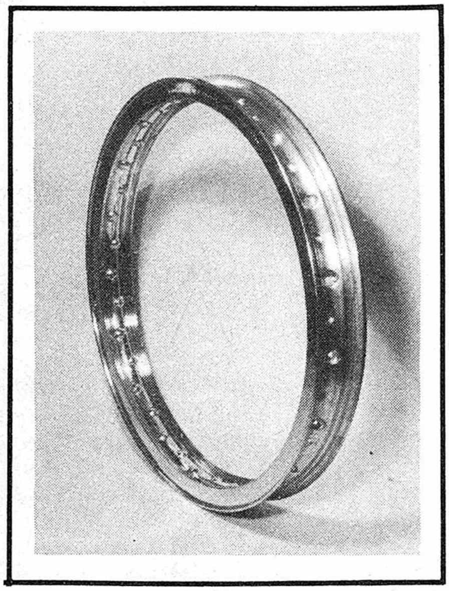
ACCESSORY CATALOG

Borrani rims, TT 4-leading shoe brakes, Dellorto carbs, Pirelli tires, A.G.V. helmets, Baruffaldi goggles, Baroni forks and shocks. All these and many other great accessories for street, track and trail. Get it on with Cosmo accessories. Send $1.00 for a catalog to *Cosmopolitan Motors, Inc., Hatboro, Pa. 19040.*



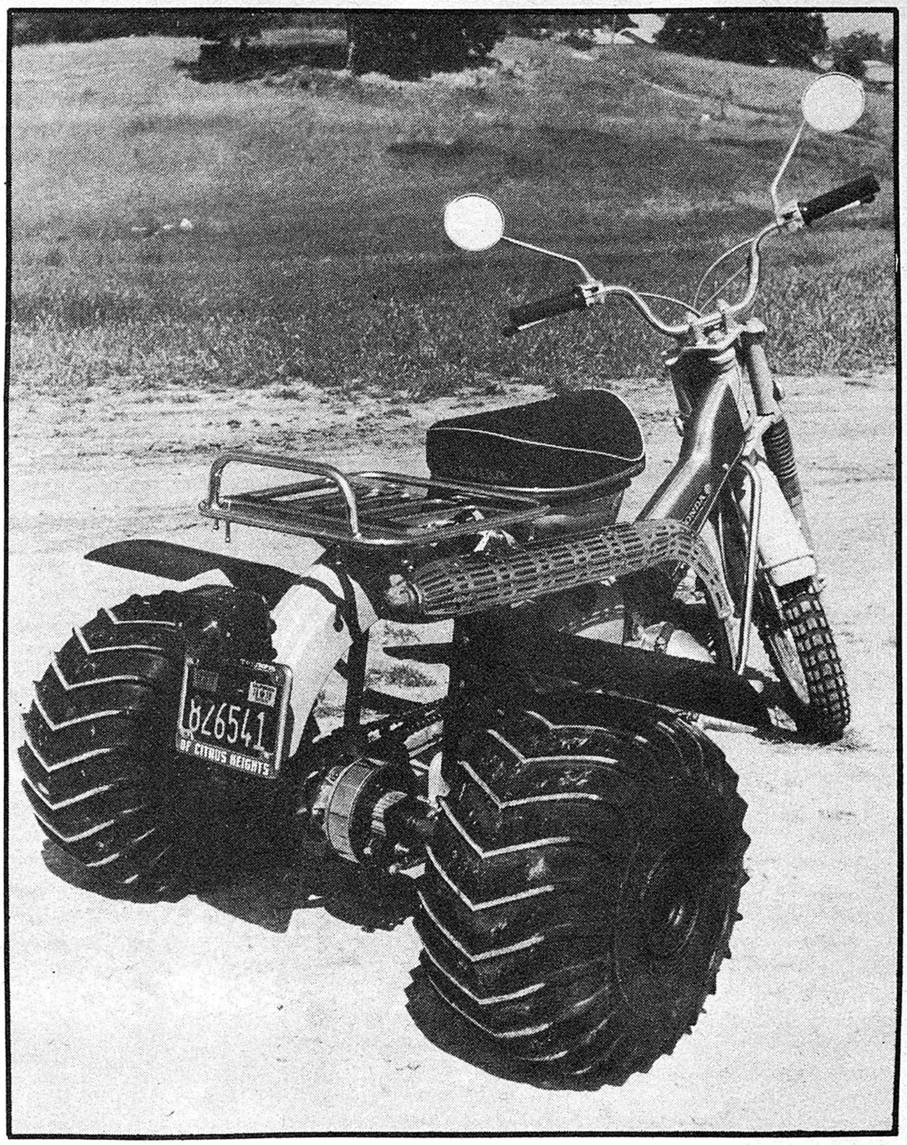
HEAVY DUTY RIMS

These new Borrani Cross line of heavy duty rims are designed with competition in mind. The Cross rims feature new materials and an improved cross section to withstand the greatest loads, yet still retain the weight saving features of aluminum alloy construction. The WM2 21 Cross is the strongest 21-inch rim available today and can be obtained drilled or undrilled for most popular hubs. The 250C-18 Cross rim is a full 3½ inches wide, ideally suited to the new wide tires being used on motocross and big street bikes today. The extra 5/8-inch width over a WM3 rim gives both added strength and a lower profile for more tire contact area. Also new in the Borrani line is the 4-inch wide 16-inch rim for chopper use. The strength and beauty of aluminum alloy makes a solid base of quality for your customer machine. *Big Grizzly Fun Development Co., 812 S. Missouri, Waterford, Calif. 95386.*



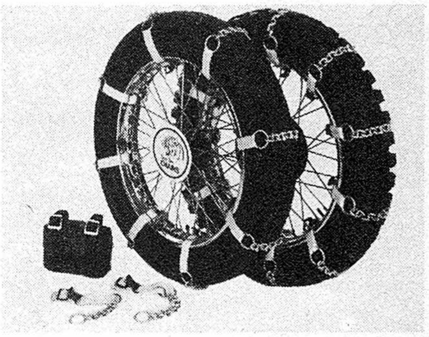
HONDA ENGINES

Yoshimura Competition Components is now supplying race-modified 4-cylinder 750 engines on both an exchange and outright basis in states of tune ranging from 75 to 100 horsepower. Beginning with the popular 750cc 4-cylinder engine, Yoshimura modifies the basic engine and adds its own competition tested components to create any level of power all the way up to the engine which was in Gary Fisher's bike when he led this year's Daytona race for the first four laps. Carburetion, transmissions, pistons, crankshafts, valves, heads, megaphones and virtually every other part of the engine may be modified to a customer's order. Both full 750cc and 812cc versions are available. If company directions are followed, Yoshimura engines are dependable, trustworthy, courageous and superfast. A streetable engine turns 11.2 success and reliability for both street and racing. Modified 350cc engines quarters. Separate components may also be purchased for personal installation by the buyer. Yoshimura components may be used with equal are also available. *Yoshimura Components, P.O. Box 267, Waterford, Calif. 95386.*



TIRE CHAINS

Tiger Chains can turn your street tire into an instant knobby without changing your tire. These chains are designed to fit securely on all sizes of tires. Constructed of bar-reinforced, case-hardened steel, they are available in two models. The trail version for street tires has a bright zinc-plated finish and eight specially-designed units providing traction surpassing that of the knobby. For cyclists with knobby tires a competition set, with an iridescent yellow chromate finish and eleven units, delivers fantastic traction power in enduro and cross-country competition. Guaranteed safe for spokes and chrome rim. Tiger Chains open new dimensions in motorcycling for the winter sports cyclists and summer trail riders. Postpaid prices are $13.95 for the trail set and $19.95 for the competition set. A custom carrying case is available for $3.00 extra. *Tiger Tire Chain Company, 7800 Perimeter Road South, Seattle, Washington 98108.*



ATC KIT

With an ATC Conversion Kit you can have three times the fun with your trail bike, challenging mud, sand and snow. The ATC Conversion Kit allows you to convert your trail bike to an all-terrain fun bike in short order. The ATC Conversion Kit can be removed quickly and your bike restored to its original configuration. Fits both Honda CT-90 and CT-70 Consult your dealer for special installation on other bikes. Price is $175.00. *Trail Accessories of California, P.O. Box 734, Citrus Heights, Calif. 95610.*

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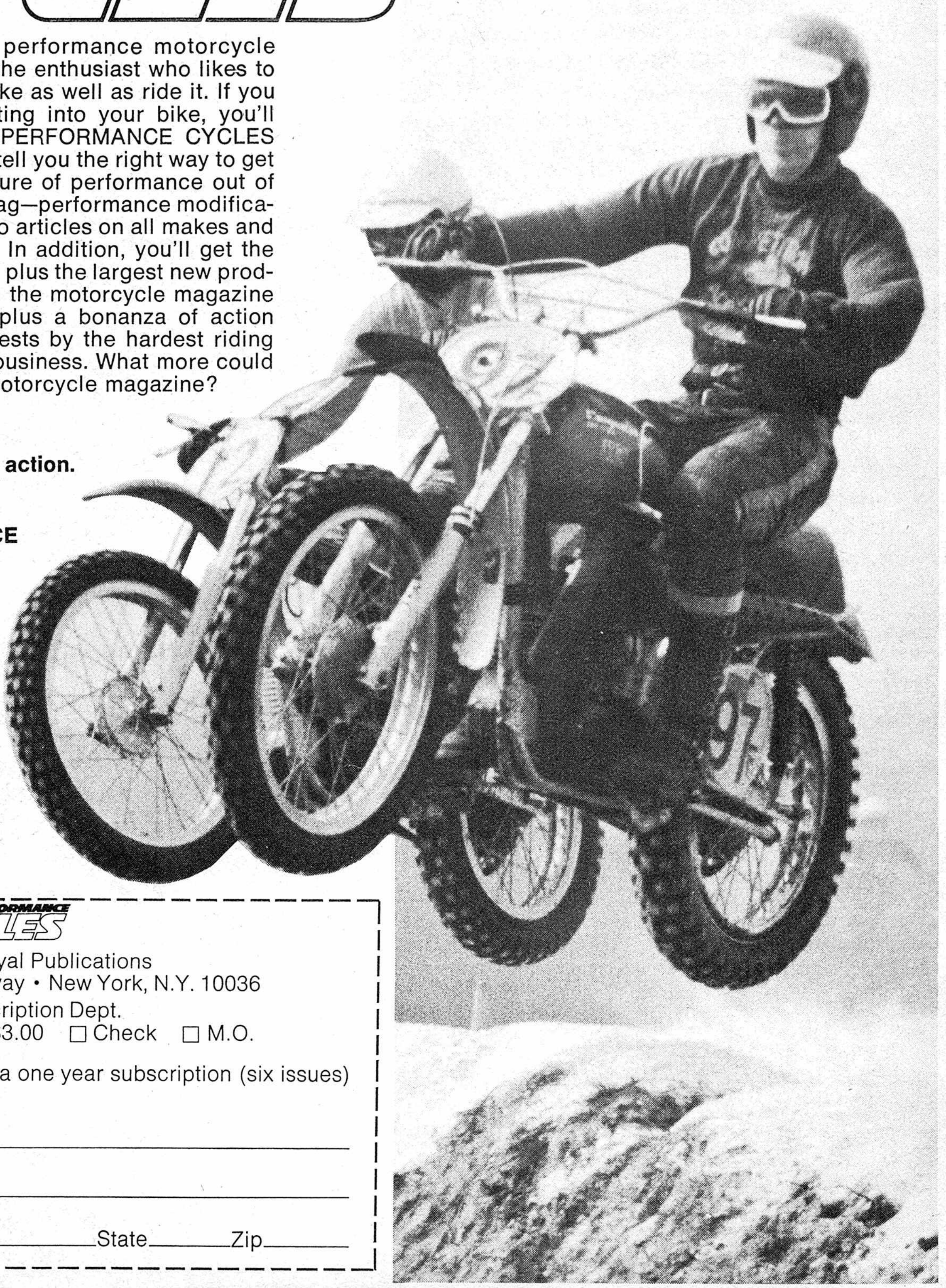

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906	283	195
909	327	350
937	396	375
938	327	365
939	427	435
940	454	390
941	350	370
942	350	350
943	427	430
947	Z/28	302
948	Z/28	350
949	454	450
FORD		
914	289	271
924	302	290
930	427	425
931	351	330
932	429	370
933	428	335
PONTIAC		
919	400	370
920	455	370
921	455	335
922	421	370
925	389	360
MOPAR (Plymouth/Dodge)		
929	440	390
944	340	275
945	383	335
946	426	425
OLDSMOBILE		
926	400	360
927	350	325
928	455	370
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GROMER

(continued from page 5)

making exaggerated hand signals, stopping for two minutes at the stop sign, figure eights in the parking bay, in and out of the pylons, the whole bit. It was ludicrous. Strained slow motion riding on a heavy bike for an oblivic inspector.

My joints felt like rigor mortis had s in by the time Joe finally came bac through the door. The officers had finished with the doll and it was sitting at the edge of the desk. Naturally I couldn't resist a little goof on the whole scene. So as I walked up to Joe, I said loud enough for the trooper to hear, "Hey man, that was terrific. But how come you wipe out that stop sign?"

The joke didn't work. Joe got his license. Too bad, I figured. If we went back a third time, I could have copped another rubber doll and had me a matched set.

SUZUKI

(continued from page 36)

and bulk of the exhaust system. The plastic front and rear fenders from the 400cc TM400R racer were substituted for the stock Sierra parts with a portion of one of the Webco/Preston Petty plastic rear fenders used down near the engine.

Aragon plastic number plates clip in place on the front fork tubes. The forks themselves are filled with 20W Torco fork oil and the springs set on the medium of their three settings. The rear shocks can be set on whichever of their five settings that seem to best match your weight and the roughness of the terrain you race over.

Mary Moreno didn't wear safety belts because they dirtied her dress.

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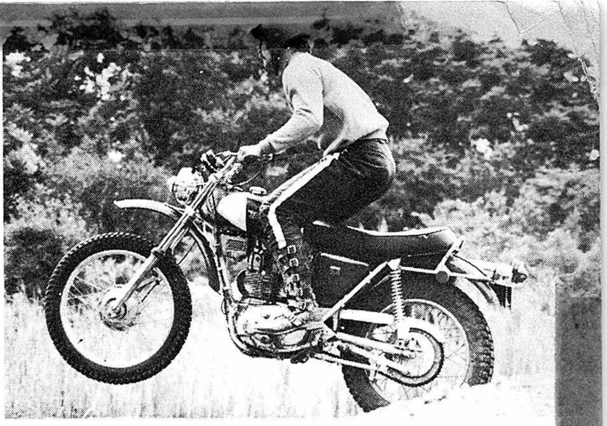

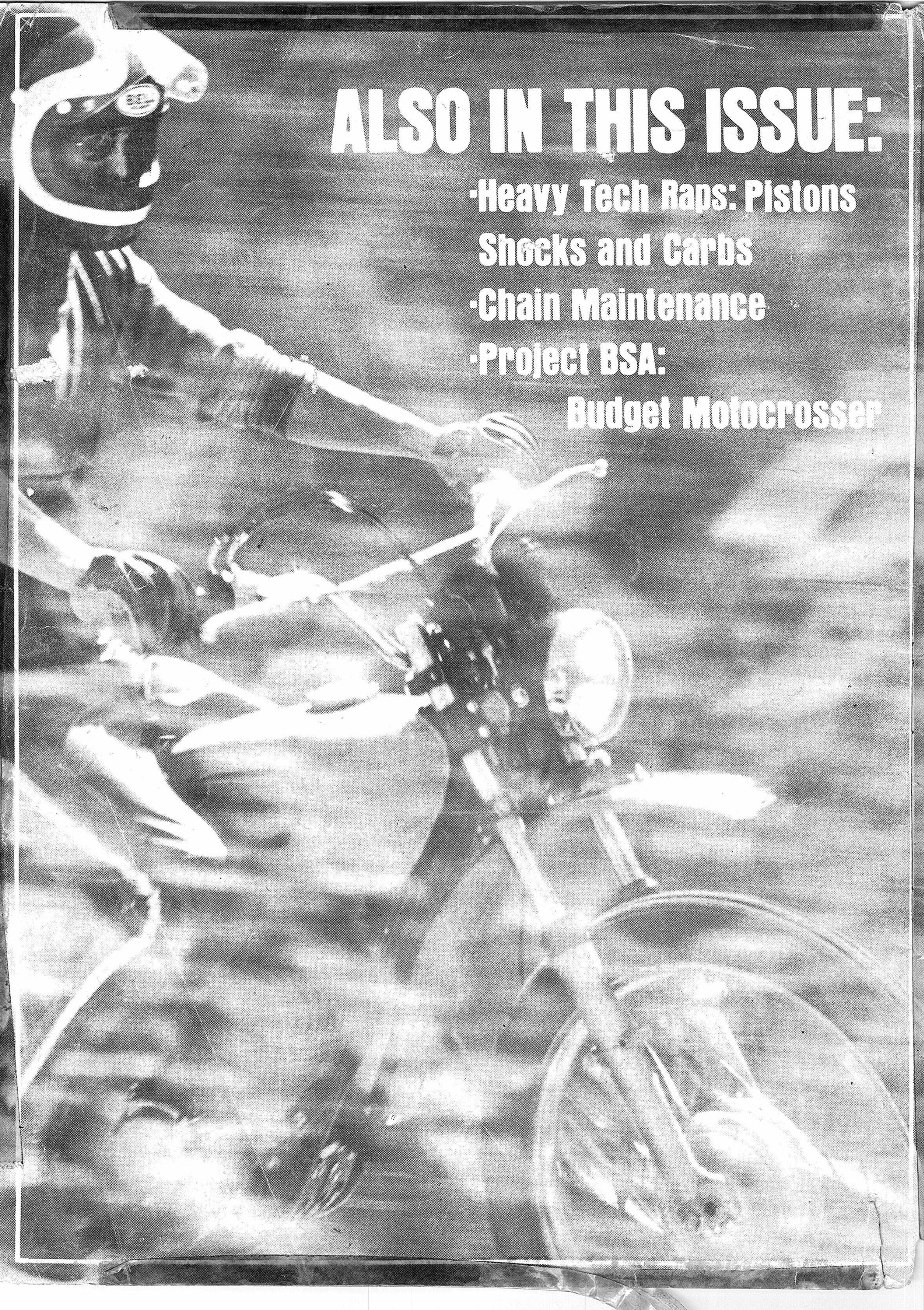

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